FINAL SUBMITTAL

VOLUME II APPENDIX G, PART 1

FEASIBILITY STUDY FOR EXPANSION OF ENERGY MONITORING AND CONTROL SYSTEM (EMCS) FORT DRUM, NEW YORK

Prepared for

NORFOLK DISTRICT CORPS OF ENGINEERS, CENAO-EN-MC 803 FRONT STREET, NORFOLK, VIRGINIA 23510

Under

U.S. ARMY ENGINEER DISTRICT, MOBILE INDEFINITE DELIVERY A-E CONTRACT CONTRACT NO. DACA01-94-D-0033 DELIVERY ORDER NO. 0006

EMC No. 1406-006 January 1997

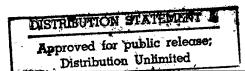
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DEPARTMENT OF THE ARMY

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Marie Wakeffeld,

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EXECUTIVE SUMMARY

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LIST OF ABBREVIATIONS

AC - air conditioning

ACC - anticipated contract cost

ACCU - air cooled condensing unit

ACM - asbestos containing material

ACU(s) - auxiliary control unit(s)

AHU - air handling unit

AI - analog input

AO - analog output

ASCII - American Standard Code for Information Interchange

ASHRAE - American Society of Heating, Refrigeration, and Air conditioning Engineers

B/C - benefit-to-cost ratio

BCD - binary coded decimal

BLDG - building

BEACON - Building Energy Simulation Program

Btu - British thermal units

Btuh - British thermal units per hour

B/W - black and white

C - Celsius

CCC - central communications controller

ccf - one hundred (100) cubic feet

CCU - central control unit

cf - cubic foot, cubic feet

cfm - cubic feet per minute

CLM - command line mnemonic

CLMI - command line mnemonic interpreter

COE - Corps of Engineers

COS - central operator station

CPU - central processing unit

CRT - cathode ray tube

CU(s) - control unit(s)

CWE - current working estimate

d - day(s)

DCP - duty cycle program

DEH - Directorate of Engineering and Housing

DHW - direct memory access

DI - digital input

DO - digital output

DOD - Department of Defense

DPW - Department of Public Works

DTM - data transmission media

DX - direct expansion

E/C - energy-to-cost ratio

ECIP - Energy Conservation Investment Program

ECO - energy conservation opportunity

EEAP - energy engineering analysis program

eff - efficiency

elec. - electricity

EMC - EMC Engineers, Inc.

EMCS - energy monitoring and control system

EMI - electromagnetic interference

ESCO - energy service company

EZ-DOE - Building Energy Simulation Program

F - Fahrenheit

FO - fiber optic(s)

ft - foot, feet

ft² - square feet

FY - fiscal year

gal - gallon(s)

hp - horsepower

hr - hours(s)

H & V - heating and ventilating

HVAC - heating, ventilation, and air conditioning

in. - inch(es)

I/O - input/output

kBtu - one thousand British thermal units

kcf - one thousand cubic feet

klb - one thousand pounds

kva - kilovolt - ampere

kW - kilowatt, one thousand watts

kWh - kilowatt-hour, one thousand watt-hours

1b - pound(s)

LCCA - life cycle cost analysis

LCCID - life cycle cost in design

LED - light emitting diode

LPG - liquefied petroleum gas

MAU - make-up air unit

MBtu - one million Btu

MCR - master control room

MHz - megahertz

Mh - man-hours(s)

mo - months(s)

MW - megawatt, one million watts

MWh - megawatt-hour, one million watt-hours

MZAHU - Multizone air handling unit

NA - Not active or Not applicable

NG - natural gas

NOAA - National Oceanic and Atmospheric Administration

no. - number

OA - outside air

O&M - operation and maintenance

PC - personal computer

PM - preventative maintenance

PROM - programmable read-only memory

psi(a)(g) - pounds per square inch (absolute) (gage)

RAM - random access memory

RCU(s) - remote control unit(s)

RTC - real-time clock

RTDOS/E - real-time disk operating system /executive

S&A - Supervision and Administration

scfm - sea-level cubic feet per minute

SES - shared energy savings

SIOH - supervision, inspection, and overhead

SIR - savings-to-investment ratio

SPW - single present worth

sq.ft. - square feet

st/sp - start/stop

stm - steam

SZAHU - single zone air handling unit

t - ton

temp - temperature

TRY - test reference year

UA - overall heat transfer coefficient (Btu/hr/ft²/°F)

UCU(s) - unitary control unit(s)

UH - unit heater

UMCS - utility monitoring and control system

UPW - uniform present worth

VAV - variable air volume

wk - week(s)

yr - year(s)

APPENDIX G ENERGY CALCULATIONS

APPENDIX G.1 ENERGY CONSTANT CALCULATIONS

DENVER • ATLANTA • GERMANY

JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

3

CHECKED BY:

BC 20-Apr-95

DATE:

36

BUILDING NO.: BLDG. TYPE:

MEDICAL CENTER

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	3217.0	1604.7	1604.7	1476.5	1476.5	
COOLING (kWH)	39966.4	32545.1	32545.1	20642.8	20642.8	

SUPPLY AIR FAN	24085	CFM
FLOOR AREA	26440	FT ²
CFMI	7180	CFM
UA		BTU/HR • °F
BUILDING CONST	2	(1 FOR LIGHT)
		(2 FOR HEAVY)

EZDOE RUN DEFINITION:			
BASERUN	EXISTING OPERATION		
RUN1	NIGHT SETBACK		
RUN2	ECONOMIZER		
RUN3	DDC		
RUN4	FORCED VENTILATION		
RUN5			

HOURS OF	OCCUPANCY		ANNUAL HEATING & COC	OLING HOURS	
M-F	700	1630	46.5 HR	HR. ON HEATING	1488 HR/YR
SAT.	0	0	0 HR	HR. ON COOLING	930 HR/YR
SUN.	0	0	0 HR	HR. OFF HEATING	3888 HR/YR
	TOTAL OCCU	PY HR.	46.5 HR/WK	HR. OFF COOLING	2430 HR/YR
	TOTAL UNOC	C. HR.	121.5 HR/WK		
	ANNUAL OCC	UPY HR.	2425 HR/YR		
	ANNUAL UNO	CC. HR.	6335 HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 1488 = 3888 HR/YR HOUR SAVE (COOLING ONL 3360 - 930 = 2430 HR/YR

HOAUHC	3216.97 MBtu -	1604.742 MBtu	=	0.00E+00 Btu/CFM-HR	
	7180 CFM *	6335 HR/YR			
HOAUH	3216.97 MBtu -	1604.742 MBtu	=	0.00E+00 Btu/CFM-HR	ł
	7180 CFM *	3888 HR/YR			
COAUHC	39966.4 kWH -	32545.12 kWH	=	1.63E-04 kWH/CFM-HR	
	7180 CFM *	6335 HR/YR			
COAUC	39966.4 kWH -	32545.12 kWH	=	4.25E-04 kWH/CFM-HR	
	7180 CFM *	2430 HR/YR			
HOAOHC	3216.97 MBtu -	1612.228 MBtu	=	9.22E+01 Btu/CFM-HR	
	7180 CFM *	2425 HR/YR			
НОАОН	3216.97 MBtu -	1612.228 MBtu	=	1.50E+02 Btu/CFM-HR	
	7180 CFM *	1488 HR/YR			
COAOHC	39966.4 kWH	7421.278 kWH	=	1.87E-03 kWH/CFM-HR	- 1
	7180 CFM *	2425 HR/YR			
COAOC	39966.4 kWH	7421.278 kWH	=	4.87E-03 kWH/CFM-HR	
	7180 CFM *	930 HR/YR			
DC	1/6 (10 MINUTES PEI	R HOUR)	=	0.17	
DC DEMAND	1 / 6 (10 MINUTES PE	R HOUR)	=	0.17	

DENVER • ATLANTA • GERMANY

JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

BG

CHECKED BY:

ВС

DATE:

20-Apr-95 36

BUILDING NO.: BLDG. TYPE:

MEDICAL CENTER

ECC 32545.12 kWH - 32545.12 kWH = 0.00E+00 kWH/CFM-HR 24085 CFM * 930 HR/YR ECHC 32545.12 kWH - 32545.12 kWH = 0.00E+00 kWH/CFM-HR 24085 CFM * 2425 HR/YR NSUCHC 39966.4 kWH - 32545.12 kWH = 4.86E-05 kWH/CFM-HR 24085 CFM * 6335 HR/YR NSUCC 39966.4 kWH - 32545.12 kWH = 7.93E-05 kWH/CFM-HR 24085 CFM * 3888 HR/YR DDCCHC 32545.12 kWH - 20642.84 kWH = 2.04E-04 kWH/CFM-HR 24085 CFM * 2425 HR/YR DDCCC 32545.12 kWH - 20642.84 kWH = 5.31E-04 kWH/CFM-HR 24085 CFM * 930 HR/YR NSC 3216.97 MBtu - 1604.742 MBtu = 6.10E+04 Btu/ft^2 26440 AREA DSC 1604.742 MBtu - 1476.506 MBtu = 4.85E+03 Btu/ft^2 26440 AREA FV 1476.506 MBtu - 1476.506 MBtu = 0.00E+00 Btu/CFM-HR 7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON OAR 740 HR/YR * 0.01 = 7.4 HR/YR					
ECHC 32545.12 kWH - 32545.12 kWH = 0.00E+00 kWH/CFM-HR 24085 CFM * 2425 HR/YR	ECC	32545.12 kWH -	32545.12 kWH	=	0.00E+00 kWH/CFM-HR
24085 CFM * 2425 HR/YR NSUCHC 39966.4 kWH - 32545.12 kWH = 4.86E-05 kWH/CFM-HR 24085 CFM * 6335 HR/YR NSUCC 39966.4 kWH - 32545.12 kWH = 7.93E-05 kWH/CFM-HR 24085 CFM * 3888 HR/YR DDCCHC 32545.12 kWH - 20642.84 kWH = 2.04E-04 kWH/CFM-HR 24085 CFM * 2425 HR/YR DDCCC 32545.12 kWH - 20642.84 kWH = 5.31E-04 kWH/CFM-HR 24085 CFM * 930 HR/YR NSC 3216.97 MBtu - 1604.742 MBtu = 6.10E+04 Btu/ft^2 26440 AREA DSC 1604.742 MBtu - 1476.506 MBtu = 4.85E+03 Btu/ft^2 26440 AREA FV 1476.506 MBtu - 1476.506 MBtu = 0.00E+00 Btu/CFM-HR 7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		24085 CFM *	930 HR/YR]	
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24085 CFM * 6335 HR/YR NSUCC 39966.4 kWH - 32545.12 kWH = 7.93E-05 kWH/CFM-HR 24085 CFM * 3888 HR/YR DDCCHC 32545.12 kWH - 20642.84 kWH = 2.04E-04 kWH/CFM-HR 24085 CFM * 2425 HR/YR DDCCC 32545.12 kWH - 20642.84 kWH = 5.31E-04 kWH/CFM-HR 24085 CFM * 930 HR/YR NSC 3216.97 MBtu - 1604.742 MBtu = 6.10E+04 Btu/ft^2 26440 AREA DSC 1604.742 MBtu - 1476.506 MBtu = 4.85E+03 Btu/ft^2 26440 AREA FV 1476.506 MBtu - 1476.506 MBtu = 0.00E+00 Btu/CFM-HR 7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		24085 CFM *	2425 HR/YR		
NSUCC 39966.4 kWH - 32545.12 kWH = 7.93E-05 kWH/CFM-HR 24085 CFM * 3888 HR/YR DDCCHC 32545.12 kWH - 20642.84 kWH = 2.04E-04 kWH/CFM-HR 24085 CFM * 2425 HR/YR DDCCC 32545.12 kWH - 20642.84 kWH = 5.31E-04 kWH/CFM-HR 24085 CFM * 930 HR/YR NSC 3216.97 MBtu - 1604.742 MBtu = 6.10E+04 Btu/ft^2 26440 AREA DSC 1604.742 MBtu - 1476.506 MBtu = 4.85E+03 Btu/ft^2 26440 AREA FV 1476.506 MBtu - 1476.506 MBtu = 0.00E+00 Btu/CFM-HR 7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	NSUCHC	39966.4 kWH -	32545.12 kWH	=	4.86E-05 kWH/CFM-HR
24085 CFM * 3888 HR/YR DDCCHC 32545.12 kWH - 20642.84 kWH = 2.04E-04 kWH/CFM-HR 24085 CFM * 2425 HR/YR DDCCC 32545.12 kWH - 20642.84 kWH = 5.31E-04 kWH/CFM-HR 24085 CFM * 930 HR/YR NSC 3216.97 MBtu - 1604.742 MBtu = 6.10E+04 Btu/ft^2 26440 AREA DSC 1604.742 MBtu - 1476.506 MBtu = 4.85E+03 Btu/ft^2 26440 AREA FV 1476.506 MBtu - 1476.506 MBtu = 0.00E+00 Btu/CFM-HR 7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		24085 CFM *	6335 HR/YR		
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DDCCC 32545.12 kWH - 20642.84 kWH = 5.31E-04 kWH/CFM-HR 24085 CFM * 930 HR/YR NSC 3216.97 MBtu - 1604.742 MBtu = 6.10E+04 Btu/ft^2 26440 AREA DSC 1604.742 MBtu - 1476.506 MBtu = 4.85E+03 Btu/ft^2 26440 AREA FV 1476.506 MBtu - 1476.506 MBtu = 0.00E+00 Btu/CFM-HR 7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	DDCCHC	32545.12 kWH -	20642.84 kWH	=	2.04E-04 kWH/CFM-HR
24085 CFM * 930 HR/YR NSC 3216.97 MBtu - 1604.742 MBtu = 6.10E+04 Btu/ft^2 26440 AREA DSC 1604.742 MBtu - 1476.506 MBtu = 4.85E+03 Btu/ft^2 26440 AREA FV 1476.506 MBtu - 1476.506 MBtu = 0.00E+00 Btu/CFM-HR 7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		24085 CFM *	2425 HR/YR	1	
24085 CFM * 930 HR/YR NSC 3216.97 MBtu - 1604.742 MBtu = 6.10E+04 Btu/ft^2 26440 AREA DSC 1604.742 MBtu - 1476.506 MBtu = 4.85E+03 Btu/ft^2 26440 AREA FV 1476.506 MBtu - 1476.506 MBtu = 0.00E+00 Btu/CFM-HR 7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	DDCCC	32545.12 kWH -	20642.84 kWH	=	5.31E-04 kWH/CFM-HR
26440 AREA DSC 1604.742 MBtu - 1476.506 MBtu = 4.85E+03 Btu/ft^2 26440 AREA FV 1476.506 MBtu - 1476.506 MBtu = 0.00E+00 Btu/CFM-HR 7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		24085 CFM *	930 HR/YR		
DSC 1604.742 MBtu - 1476.506 MBtu = 4.85E+03 Btu/ft^2 26440 AREA FV 1476.506 MBtu - 1476.506 MBtu = 0.00E+00 Btu/CFM-HR 7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	NSC	3216.97 MBtu -	1604.742 MBtu	=	6.10E+04 Btu/ft^2
26440 AREA FV 1476.506 MBtu - 1476.506 MBtu = 0.00E+00 Btu/CFM-HR 7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		26440) AREA		
FV 1476.506 MBtu - 1476.506 MBtu = 0.00E+00 Btu/CFM-HR 7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	DSC	1604.742 MBtu -	1476.506 MBtu	=	4.85E+03 Btu/ft^2
7180 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		26440) AREA	1	
CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	FV	1476.506 MBtu -	1476.506 MBtu	=	0.00E+00 Btu/CFM-HR
= 9.6 kWH/TON		7180 CFM *	160 HR/YR		
	CHWR	(0.915 kW X 0.012 Eff.)	X 436 HRS X 2 Degrees	of Reset)	
OAR 740 HR/YR * 0.01 = 7.4 HR/YR				=	9.6 kWH/TON
	OAR	740 HR/YR *	0.01	=	7.4 HR/YR

DENVER • ATLANTA • GERMANY

JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY:

ВС

DATE:

19-Apr-95 1750

BUILDING NO.: BLDG, TYPE:

MOTOR REPAIR SHOP

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	5899.2	3657.2	3657.2	3579.0	3579.0	
COOLING (kWH)	0.0	0.0	0.0	0.0	0.0	

SUPPLY AIR FAN	13370	CFM	
FLOOR AREA	38336	FT ²	
CFMI	10204	CFM	
UA		BTU/HR • °F	
BUILDING CONST	2	(1 FOR LIGHT)	
		(2 FOR HEAVY)	

EZDOE RUN DEFINITION:			
BASERUN	EXISTING OPERATION		
RUN1	NIGHT SETBACK		
RUN2	ECONOMIZER		
RUN3	DDC		
RUN4	FORCED VENTILATION		
RUN5			

HOURS OF	OCCUPANCY				ANNUAL HEATING & CO	DLING HOURS
M-F	600	1730	56.5	HR	HR. ON HEATING	1808 HR/YR
SAT.	0	0	0	HR	HR. ON COOLING	1130 HR/YR
SUN.	0	0	0	HR	HR. OFF HEATING	3568 HR/YR
	TOTAL OCCUP	TOTAL OCCUPY HR. TOTAL UNOCC. HR. ANNUAL OCCUPY HR.		HR/WK	HR. OFF COOLING	2230 HR/YR
	TOTAL UNOC			HR/WK		
	ANNUAL OCCI			HR/YR		
	ANNUAL LINO	CC HR	5814	HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING	8760 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY	5376 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY	3360 HR/YR

HOUR SAVE (HEATING ONL	5376	-	1808	=	3568 HR/YR
HOUR SAVE (COOLING ONL	3360	-	1130	=	2230 HR/YR

HOAUHC	5899.2 MBtu -	3657.21	MBtu	=	0.00E+00 Btu/CFM-HR
	10204 CFM *	5814	HR/YR		
HOAUH	5899.2 MBtu -	3657.21	MBtu	=	0.00E+00 Btu/CFM-HR
	10204 CFM *	3568	HR/YR		
COAUHC	0 kWH -	0	kWH	=	0.00E+00 kWH/CFM-HR
	10204 CFM *	5814	HR/YR		
COAUC	0 kWH -	0	kWH	=	0.00E+00 kWH/CFM-HR
	10204 CFM *	2230	HR/YR		
HOAOHC	5899.2 MBtu -	2241.99	MBtu	=	1.22E+02 Btu/CFM-HR
	10204 CFM *	2946	HR/YR		
HOAOH	5899.2 MBtu -	2241.99	MBtu	=	1.98E+02 Btu/CFM-HR
	10204 CFM *	1808	HR/YR		
COAOHC	0 kWH	0	kWH	=	0.00E+00 kWH/CFM-HR
	10204 CFM *	2946	HR/YR		
COAOC	0 kWH	0	kWH	=	0.00E+00 kWH/CFM-HR
	10204 CFM *	1130	HR/YR		
DC	1/6 (10 MINUTES PER	(HOUR)		=	0.17
DC DEMAND	1/6 (10 MINUTES PER	(HOUR)		=	0.17

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY:

ВС

DATE:

19-Apr-95 1750

BUILDING NO.: BLDG. TYPE:

MOTOR REPAIR SHOP

ECC	0 kWH -	0	kWH	=	0.00E+00	kWH/CFM-HR
	13370 CFM *	1130	HR/YR			
ECHC	0 kWH -	0	kWH	=	0.00E+00	kWH/CFM-HR
	13370 CFM *	2946	HR/YR			
NSUCHO	0 kWH -	0	kWH	=	0.00E+00	kWH/CFM-HR
	13370 CFM *	5814	HR/YR			
NSUCC	0 kWH -	0	kWH	=	0.00E+00	kWH/CFM-HR
	13370 CFM *	3568	HR/YR			
DDCCHC	0 kWH -	0	kWH	=	0.00E+00	kWH/CFM-HR
	13370 CFM *	2946	HR/YR			
DDCCC	0 kWH -	0	kWH	=	0.00E+00	kWH/CFM-HR
	13370 CFM *	1130	HR/YR			
NSC	5899.2 MBtu -	3657.21	MBtu	=	5.85E+04	Btu/ft^2
	383	336 AREA				
DSC	3657.21 MBtu -	3579	MBtu	=	2.04E+03	Btu/ft^2
	383	336 AREA				
FV	3579 MBtu -	3579	MBtu	=	0.00E+00	Btu/CFM-HR
	10204 CFM *	160	HR/YR			
CHWR	(0.915 kW X 0.012 E	ff. X 436 HRS X	2 Degrees	of Reset)		
				=	9.6	kWH/TON
OAR	740 HR/YR ³	* 0.01		=	7.4	HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

IVB BC

CHECKED BY:

. . . .

DATE:

19-Apr-95 2060A

BUILDING NO.: BLDG, TYPE:

MNT HANGAR AVUM

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	6091.4	5845.9	5845.9	5710.1	5710.1	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	55920 CFM
FLOOR AREA	37828 FT ²
CFMI	55920 CFM
UA	BTU/HR • °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

EZDOE RUN DEFINITION:						
BASERUN	EXISTING OPERATION					
RUN1	NIGHT SETBACK					
RUN2	ECONOMIZER					
RUN3	DDC					
RUN4	FORCED VENTILATION					
RUN5						

HOURS OF	OCCUPANCY				ANNUAL HEATING & CO	OLING HOURS
M-F	600	2200	80	HR	HR. ON HEATING	2080 HR/YR
SAT.	0	0	0	HR	HR. ON COOLING	1394 HR/YR
SUN.	0	0	0	HR	HR. OFF HEATING	2288 HR/YR
	TOTAL OCCUPY HR.		80 HR/W	HR/WK	HR. OFF COOLING	1534 HR/YR
	TOTAL UNOC		88 HR/WK			
	ANNUAL OCC	UPY HR.	4171	HR/YR		
	ANNUAL UNO	CC. HR.	4589	HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING	8760 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY	5376 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY	3360 HR/YR

HOUR SAVE (HEATING ONL	5376	-	2080	=	3296 HR/YR
HOUR SAVE (COOLING ONL	3360	-	1394	=	1966 HR/YR

HOAUHC	6091.4 MBtu -	5845.9 MBtu	=	0.00E+00 Btu/CFM-HR	l
	55920 CFM *	4589 HR/YR			
HOAUH	6091.4 MBtu -	5845.9 MBtu	=	0.00E+00 Btu/CFM-HR	- 1
	55920 CFM *	3296 HR/YR			
COAUHC	0 kWH -	0 kWH	= .	0.00E+00 kWH/CFM-HR	
	55920 CFM *	4589 HR/YR			
COAUC	0 kWH -	0 kWH	= .	0.00E+00 kWH/CFM-HR	
	55920 CFM *	1966 HR/YR			
НОАОНС	6091.4 MBtu -	245.5 MBtu	=	2.51E+01 Btu/CFM-HR	
	55920 CFM *	4171 HR/YR			
HOAOH	6091.4 MBtu -	245.5 MBtu	=	5.03E+01 Btu/CFM-HR	
	55920 CFM *	2080 HR/YR			
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	55920 CFM *	4171 HR/YR			
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	ĺ
	55920 CFM *	1394 HR/YR			
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17	
DC DEMAND	1/6 (10 MINUTES PER	HOUR)	=	0.17	

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CHECKED BY:

ВС

DATE:

19-Apr-95 2060A

BUILDING NO.: BLDG. TYPE:

MNT HANGAR AVUM

ECC	0 kWH -	0 kWH		0.00E+00 kWH/CFM-HR
200	55920 CFM *	1394 HR/YR	-	U.UUE+UU KVVH/CHVI-HK
FOLIO				0.005.00.114///0544.115
ECHC		0 kWH	=	0.00E+00 kWH/CFM-HR
	55920 CFM *	4171 HR/YR		
NSUCHO	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	55920 CFM *	4589 HR/YR		
NSUCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	55920 CFM *	3296 HR/YR]	
DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	55920 CFM *	4171 HR/YR		
DDCCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	55920 CFM *	1394 HR/YR		
NSC	6091.4 MBtu -	5845.9 MBtu	=	6.49E+03 Btu/ft^2
	37828	AREA		
DSC	5845.9 MBtu -	5710.1 MBtu	=	3.59E+03 Btu/ft^2
	37828	AREA		
FV	5710.1 MBtu -	5710.1 MBtu	=	0.00E+00 Btu/CFM-HR
	55920 CFM *	160 HR/YR	1	
CHWR	(0.915 kW X 0.012 Eff. X	436 HRS X 2 Degrees	of Reset)	
			=	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY:

вс

DATE:

19-Apr-95

BUILDING NO.:

2060B

BLDG. TYPE:

MNT HANGAR AVUM_

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	1076.4	1076.4	1076.4	831.6	831.6	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	19600 CFM
FLOOR AREA	20642 FT ²
CFMI	2940 CFM
UA	BTU/HR • °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

EZDOE RU	N DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	ECONOMIZER
RUN3	DDC
RUN4	FORCED VENTILATION
RUN5	

HOURS OF	OCCUPANCY		ANNUAL HEATING & COOLING HOURS			
M-F	0	2400	120	HR	HR. ON HEATING	4368 HR/YR
SAT.	0	2400	24	HR	HR. ON COOLING	2928 HR/YR
SUN.	0	2400	24	HR	HR. OFF HEATING	0 HR/YR
	TOTAL OCCU	PY HR.	168	HR/WK	HR. OFF COOLING	0 HR/YR
	TOTAL UNOC		0	HR/WK		
	ANNUAL OCC	UPY HR.	8760	HR/YR		
	ANNUAL UNC	CC. HR.	0	HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING 8760 HR/YR PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY 5376 HR/YR PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY 3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 4368 = 1008 HR/YR HOUR SAVE (COOLING ONL 3360 - 2928 = 432 HR/YR

1076.4 MBtu -	1076.4 MBtu	=	0.00E+00 Btu/CFM-HR	
2940 CFM *	0 HR/YR			
1076.4 MBtu -	1076.4 MBtu	=	0.00E+00 Btu/CFM-HR	
2940 CFM *	1008 HR/YR			
0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
2940 CFM *	0 HR/YR			
0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
2940 CFM *	432 HR/YR			
1076.4 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
2940 CFM *	8760 HR/YR			
1076.4 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
2940 CFM *	4368 HR/YR			
0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
2940 CFM *	8760 HR/YR			
0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
2940 CFM *	2928 HR/YR			
/6 (10 MINUTES PER	=	0.17		
/6 (10 MINUTES PER	HOUR)	=	0.17	
	2940 CFM * 1076.4 MBtu - 2940 CFM * 0 kWH - 2940 CFM * 0 kWH - 2940 CFM * 1076.4 MBtu - 2940 CFM * 1076.4 MBtu - 2940 CFM * 0 kWH 2940 CFM * 0 kWH 2940 CFM *	2940 CFM * 0 HR/YR 1076.4 MBtu - 1076.4 MBtu 2940 CFM * 1008 HR/YR 0 kWH - 0 kWH 2940 CFM * 0 HR/YR 0 kWH - 0 kWH 2940 CFM * 432 HR/YR 1076.4 MBtu - 0 MBtu 2940 CFM * 8760 HR/YR 1076.4 MBtu - 0 MBtu 2940 CFM * 4368 HR/YR 0 kWH 2940 CFM * 8760 HR/YR 0 kWH 0 kWH 0 kWH 0 kWH	2940 CFM * 0 HR/YR 1076.4 MBtu - 1076.4 MBtu = 2940 CFM * 1008 HR/YR 0 kWH - 0 kWH = 2940 CFM * 0 HR/YR 0 kWH - 0 kWH = 2940 CFM * 432 HR/YR 1076.4 MBtu - 0 MBtu = 2940 CFM * 8760 HR/YR 1076.4 MBtu - 0 MBtu = 2940 CFM * 8760 HR/YR 1076.4 MBtu - 0 MBtu = 2940 CFM * 8760 HR/YR 0 kWH 0 kWH = 2940 CFM * 8760 HR/YR 0 kWH 0 kWH = 2940 CFM * 8760 HR/YR 0 kWH 0 kWH = 2940 CFM * 2928 HR/YR	2940 CFM * 0 HR/YR 1076.4 MBtu - 1076.4 MBtu = 0.00E+00 Btu/CFM-HR 2940 CFM * 1008 HR/YR 0 kWH - 0 kWH 2940 CFM * 0 HR/YR 0 kWH - 0 kWH = 0.00E+00 kWH/CFM-HR 2940 CFM * 432 HR/YR 1076.4 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 2940 CFM * 8760 HR/YR 1076.4 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 2940 CFM * 8760 HR/YR 1076.4 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 2940 CFM * 4368 HR/YR 0 kWH 0 kWH = 0.00E+00 kWH/CFM-HR 2940 CFM * 8760 HR/YR 0 kWH 0 kWH = 0.00E+00 kWH/CFM-HR 2940 CFM * 8760 HR/YR 0 kWH 0 kWH = 0.00E+00 kWH/CFM-HR 2940 CFM * 2928 HR/YR 76 (10 MINUTES PER HOUR) = 0.17

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY: .

BC

DATE:

19-Apr-95 2060B

BUILDING NO.: BLDG, TYPE:

MNT HANGAR AVUM

ECC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	19600 CFM *	2928 HR/YR		
ECHO	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	19600 CFM *	8760 HR/YR		
NSUCHO	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	19600 CFM *	0 HR/YR		
NSUCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	19600 CFM *	1008 HR/YR		
DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	19600 CFM *	8760 HR/YR		
DDCCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	19600 CFM *	2928 HR/YR		
NSC	1076.4 MBtu -	1076.4 MBtu	=	0.00E+00 Btu/ft^2
	20642	AREA		
DSC	1076.4 MBtu -	831.6 MBtu	=	1.19E+04 Btu/ft^2
	20642	AREA		
FV	831.6 MBtu -	831.6 MBtu	=	0.00E+00 Btu/CFM-HR
	2940 CFM *	0 HR/YR		
CHWR	(0.915 kW X 0.012 Eff. X	436 HRS X 2 Degrees	of Reset)	
			= '	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSVV

CHECKED BY:

BC

DATE:

19-Apr-95

BUILDING NO.:

2065A

BLDG. TYPE:

AF OPS BUILDING

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	5694.6	5694.6	5694.6	4575.8	0.0	
COOLING (kWH)	67524	67524	67524	38984	0	

SUPPLY AIR FAN	22705 CFM
FLOOR AREA	19308 FT ²
CFMI	4592 CFM
UA	BTU/HR • °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

EZDOE RU	N DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	ECONOMIZER
RUN3	DDC
RUN4	FORCED VENTILATION
RUN5	

HOURS OF	OCCUPANCY		ANNUAL HEATING & COOLING HOURS			
M-F	0	2400	120 HR	HR. ON HEATING	4368 HR/YR	
SAT.	0	2400	24 HR	HR. ON COOLING	2928 HR/YR	
SUN.	0	2400	24 HR	HR. OFF HEATING	0 HR/YR	
<u> </u>	TOTAL OCCUI	PY HR.	168 HR/WK	HR. OFF COOLING	0 HR/YR	
	TOTAL UNOC		0 HR/WK			
	ANNUAL OCC	UPY HR.	8760 HR/YR			
	ANNUAL UNO	CC HR	0 HR/YR	7		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY

3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 4368 = 1008 HR/YR HOUR SAVE (COOLING ONL 3360 - 2928 = 432 HR/YR

HOAUHC	5694.6 MBtu -	5694.6 MBtu	=	0.00E+00 Btu/CFM-HR	ļ
	4592 CFM *	0 HR/YR			
HOAUH	5694.6 MBtu -	5694.6 MBtu	=	0.00E+00 Btu/CFM-HR	
	4592 CFM *	1008 HR/YR			
COAUHC	67524.1 kWH -	67524.1 kWH	=	0.00E+00 kWH/CFM-HR	
	4592 CFM *	0 HR/YR			
COAUC	67524.1 kWH -	67524.1 kWH	=	0.00E+00 kWH/CFM-HR	
	4592 CFM *	432 HR/YR			
HOAOHC	5694.6 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	4592 CFM *	8760 HR/YR			
HOAOH	5694.6 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	4592 CFM *	4368 HR/YR			
COAOHC	67524.1 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	ļ
	4592 CFM *	8760 HR/YR			
COAOC	67524.1 kWH	0 kWH] =	0.00E+00 kWH/CFM-HR	
	4592 CFM *	2928 HR/YR			
	1/6 (10 MINUTES PER		=	0.17	
DC DEMAND	1/6 (10 MINUTES PER	HOUR)	=	0.17	
·					

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY:

BC

DATE:

19-Apr-95

BUILDING NO.: BLDG. TYPE: 2065A AF OPS BUILDING

ECC 67524.1 kWH - 67524.1 kWH = 0.00E+00 kWH/CFM-HR 22705 CFM * 2928 HR/YR ECHC 67524.1 kWH - 67524.1 kWH = 0.00E+00 kWH/CFM-HR 22705 CFM * 8760 HR/YR NSUCHC 67524.1 kWH - 67524.1 kWH = 0.00E+00 kWH/CFM-HR 22705 CFM * 0 HR/YR NSUCC 67524.1 kWH - 67524.1 kWH = 0.00E+00 kWH/CFM-HR 22705 CFM * 1008 HR/YR DDCCHC 67524.1 kWH - 38984.05 kWH = 1.43E-04 kWH/CFM-HR 22705 CFM * 8760 HR/YR DDCCHC 67524.1 kWH - 38984.05 kWH = 4.29E-04 kWH/CFM-HR 22705 CFM * 2928 HR/YR NSC 5694.6 MBtu - 5694.6 MBtu = 0.00E+00 Btu/ft^2 19308 AREA DSC 5694.6 MBtu - 4575.8 MBtu = 5.79E+04 Btu/ft^2 19308 AREA FV 4575.8 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON OAR 740 HR/YR * 0.01 = 7.4 HR/YR					
ECHC 67524.1 kWH - 67524.1 kWH = 0.00E+00 kWH/CFM-HR 22705 CFM * 8760 HR/YR NSUCHC 67524.1 kWH - 67524.1 kWH = 0.00E+00 kWH/CFM-HR 22705 CFM * 0 HR/YR NSUCC 67524.1 kWH - 67524.1 kWH = 0.00E+00 kWH/CFM-HR 22705 CFM * 1008 HR/YR DDCCHC 67524.1 kWH - 38984.05 kWH = 1.43E-04 kWH/CFM-HR 22705 CFM * 8760 HR/YR DDCCC 67524.1 kWH - 38984.05 kWH = 4.29E-04 kWH/CFM-HR 22705 CFM * 2928 HR/YR NSC 5694.6 MBtu - 5694.6 MBtu = 0.00E+00 Btu/ft^2 19308 AREA DSC 5694.6 MBtu - 4575.8 MBtu = 5.79E+04 Btu/ft^2 19308 AREA FV 4575.8 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 4592 CFM * 0 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	ECC	67524.1 kWH -	67524.1 kWH	=	0.00E+00 kWH/CFM-HR
NSUCHC 67524.1 kWH - 67524.1 kWH = 0.00E+00 kWH/CFM-HR		22705 CFM *	2928 HR/YR		
NSUCHC 67524.1 kWH - 67524.1 kWH = 0.00E+00 kWH/CFM-HR 22705 CFM * 0 HR/YR NSUCC 67524.1 kWH - 67524.1 kWH = 0.00E+00 kWH/CFM-HR 22705 CFM * 1008 HR/YR DDCCHC 67524.1 kWH - 38984.05 kWH = 1.43E-04 kWH/CFM-HR 22705 CFM * 8760 HR/YR DDCCC 67524.1 kWH - 38984.05 kWH = 4.29E-04 kWH/CFM-HR 22705 CFM * 2928 HR/YR NSC 5694.6 MBtu - 5694.6 MBtu = 0.00E+00 Btu/ft^2 19308 AREA DSC 5694.6 MBtu - 4575.8 MBtu = 5.79E+04 Btu/ft^2 19308 AREA FV 4575.8 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 4592 CFM * 0 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	ECHC	67524.1 kWH -	67524.1 kWH	=	0.00E+00 kWH/CFM-HR
NSUCC 67524.1 kWH - 67524.1 kWH = 0.00E+00 kWH/CFM-HR		22705 CFM *	8760 HR/YR		
NSUCC 67524.1 kWH - 67524.1 kWH = 0.00E+00 kWH/CFM-HR 22705 CFM * 1008 HR/YR DDCCHC 67524.1 kWH - 38984.05 kWH = 1.43E-04 kWH/CFM-HR 22705 CFM * 8760 HR/YR DDCCC 67524.1 kWH - 38984.05 kWH = 4.29E-04 kWH/CFM-HR 22705 CFM * 2928 HR/YR NSC 5694.6 MBtu - 5694.6 MBtu = 0.00E+00 Btu/ft^2 19308 AREA DSC 5694.6 MBtu - 4575.8 MBtu = 5.79E+04 Btu/ft^2 19308 AREA FV 4575.8 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 4592 CFM * 0 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	NSUCHO	67524.1 kWH -	67524.1 kWH	=	0.00E+00 kWH/CFM-HR
DDCCHC 67524.1 kWH - 38984.05 kWH = 1.43E-04 kWH/CFM-HR		22705 CFM *	0 HR/YR]	
DDCCHC 67524.1 kWH - 38984.05 kWH = 1.43E-04 kWH/CFM-HR 22705 CFM * 8760 HR/YR DDCCC 67524.1 kWH - 38984.05 kWH = 4.29E-04 kWH/CFM-HR 22705 CFM * 2928 HR/YR NSC 5694.6 MBtu - 5694.6 MBtu = 0.00E+00 Btu/ft^2 19308 AREA DSC 5694.6 MBtu - 4575.8 MBtu = 5.79E+04 Btu/ft^2 19308 AREA FV 4575.8 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 4592 CFM * 0 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	NSUCC	67524.1 kWH -	67524.1 kWH	=	0.00E+00 kWH/CFM-HR
22705 CFM * 8760 HR/YR DDCCC 67524.1 kWH - 38984.05 kWH = 4.29E-04 kWH/CFM-HR 22705 CFM * 2928 HR/YR NSC 5694.6 MBtu - 5694.6 MBtu = 0.00E+00 Btu/ft^2 19308 AREA DSC 5694.6 MBtu - 4575.8 MBtu = 5.79E+04 Btu/ft^2 19308 AREA FV 4575.8 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 4592 CFM * 0 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		22705 CFM *	1008 HR/YR		
DDCCC 67524.1 kWH - 38984.05 kWH = 4.29E-04 kWH/CFM-HR 22705 CFM * 2928 HR/YR NSC 5694.6 MBtu - 5694.6 MBtu = 0.00E+00 Btu/ft^2 19308 AREA DSC 5694.6 MBtu - 4575.8 MBtu = 5.79E+04 Btu/ft^2 19308 AREA FV 4575.8 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 4592 CFM * 0 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	DDCCHC	67524.1 kWH -	38984.05 kWH	=	1.43E-04 kWH/CFM-HR
22705 CFM * 2928 HR/YR NSC 5694.6 MBtu - 5694.6 MBtu = 0.00E+00 Btu/ft^2 19308 AREA DSC 5694.6 MBtu - 4575.8 MBtu = 5.79E+04 Btu/ft^2 19308 AREA FV 4575.8 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 4592 CFM * 0 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		22705 CFM *	8760 HR/YR		
NSC 5694.6 MBtu - 5694.6 MBtu = 0.00E+00 Btu/ft^2 19308 AREA DSC 5694.6 MBtu - 4575.8 MBtu = 5.79E+04 Btu/ft^2 19308 AREA FV 4575.8 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 4592 CFM * 0 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	DDCCC	67524.1 kWH -	38984.05 kWH	=	4.29E-04 kWH/CFM-HR
19308 AREA DSC 5694.6 MBtu - 4575.8 MBtu = 5.79E+04 Btu/ft^2 19308 AREA FV 4575.8 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 4592 CFM * 0 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		22705 CFM *	2928 HR/YR		
DSC 5694.6 MBtu - 4575.8 MBtu = 5.79E+04 Btu/ft^2 19308 AREA FV 4575.8 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 4592 CFM * 0 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	NSC	5694.6 MBtu -	5694.6 MBtu	=	0.00E+00 Btu/ft^2
19308 AREA FV		19308	AREA]	
FV 4575.8 MBtu - 0 MBtu = 0.00E+00 Btu/CFM-HR 4592 CFM * 0 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	DSC	5694.6 MBtu -	4575.8 MBtu	=	5.79E+04 Btu/ft^2
4592 CFM * 0 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		19308	3 AREA		
CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	FV	4575.8 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
= 9.6 kWH/TON		4592 CFM *	0 HR/YR		
	CHWR	(0.915 kW X 0.012 Eff.)	X 436 HRS X 2 Degrees	of Reset)	
OAR 740 HR/YR * 0.01 = 7.4 HR/YR			_	=	9.6 kWH/TON
	OAR	740 HR/YR *	0.01	=	7.4 HR/YR
The state of the s				l	

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY:

вс

DATE:

19-Apr-95

BUILDING NO.:

2065B

BLDG. TYPE:

AF OPS BUILDING

ENERGY CONSTANT CALCULATIONS

	· · · · · · · · · · · · · · · · · · ·				511114	DUNG
	BASERUN	RUN1	RUN2	RUN3	RUN4_	RUN5
HEATING (MBtu)	289.9	165.1	165.1	131.8	131.8	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	9660 CFM
FLOOR AREA	4322 FT ²
CFMI	4637 CFM
UA	BTU/HR • °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

EZDOE RUN DEFINITION:						
BASERUN	EXISTING OPERATION					
RUN1	NIGHT SETBACK					
RUN2	ECONOMIZER					
RUN3	DDC					
RUN4	FORCED VENTILATION					
RUN5						

HOURS OF	OCCUPANCY				ANNUAL HEATING & CO	OLING HOURS
M-F	600	1700	55 H	R	HR. ON HEATING	1430 HR/YR
SAT.	0	0	0 H	R	HR. ON COOLING	959 HR/YR
SUN.	0	0	0 H	R	HR. OFF HEATING	2938 HR/YR
00.1.	TOTAL OCCUP	Y HR.	55 H	R/WK	HR. OFF COOLING	1969 HR/YR
	TOTAL UNOCC		113 H	R/WK		
	ANNUAL OCCUPY HR.		2868 H	R/YR		
	ANNUAL UNO		5892 H	R/YR]	

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 1430 = 3946 HR/YR HOUR SAVE (COOLING ONL 3360 - 959 = 2401 HR/YR

HOAUHC	289.9 MBtu -	165.1 MBtu	=	0.00E+00 Btu/CFM-HR	
	4637 CFM *	5892 HR/YR			
HOAUH	289.9 MBtu -	165.1 MBtu	=	0.00E+00 Btu/CFM-HR	
	4637 CFM *	3946 HR/YR			
COAUHC	0 kWH -	0 kWH	= '	0.00E+00 kWH/CFM-HR	
Ī	4637 CFM *	5892 HR/YR			
COAUC	0 kWH -	0 kWH	= '	0.00E+00 kWH/CFM-HR	
	4637 CFM *	2401 HR/YR			
HOAOHC	289.9 MBtu -	124.8 MBtu	=	1.24E+01 Btu/CFM-HR	
Ī	4637 CFM *	2868 HR/YR			
HOAOH	289.9 MBtu -	124.8 MBtu	=	2.49E+01 Btu/CFM-HR	
	4637 CFM *	1430 HR/YR			
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	4637 CFM *	2868 HR/YR			
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	4637 CFM *	959 HR/YR			
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17	
DC DEMAND	1/6 (10 MINUTES PER	HOUR)	=	0.17	
5 5 5 E (VI) (1.15					

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY:

ВС

DATE:

19-Apr-95

BUILDING NO.:

2065B

BLDG. TYPE:

AF OPS BUILDING

ECC	0 kWH	- 0	kWH	=	0.00E+00	kWH/CFM-HR
	9660 CFM	* 959	HR/YR			
ECHC	0 kWH	- 0	kWH	=	0.00E+00	kWH/CFM-HR
	9660 CFM	* 2868	HR/YR			
NSUCHC	0 kWH	- 0	kWH	=	0.00E+00	kWH/CFM-HR
	9660 CFM	* 5892	HR/YR			
NSUCC	0 kWH	- 0	kWH	=	0.00E+00	kWH/CFM-HR
	9660 CFM	* 3946	HR/YR			
DDCCHC	0 kWH	- 0	kWH	=	0.00E+00	kWH/CFM-HR
	9660 CFM	* 2868	HR/YR			
DDCCC	0 kWH	- 0	kWH	=	0.00E+00	kWH/CFM-HR
	9660 CFM	* 959	HR/YR			
NSC	289.9 MBtu	- 165.1	MBtu	=	2.89E+04	Btu/ft^2
		4322 AREA				
DSC	165.1 MBtu	- 131.8	MBtu	==	7.70E+03	Btu/ft^2
		4322 AREA				
FV	131.8 MBtu	- 131.8	MBtu	=	0.00E+00	Btu/CFM-HR
	4637 CFM		HR/YR			
CHWR	(0.915 kW X 0.012	Eff. X 436 HRS X	2 Degrees	of Reset)		
				=		kWH/TON
OAR	740 HR/Y	₹ * 0.01		=	7.4	HR/YR
		77113993	B134B2-11-4			

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

BG

CHECKED BY:

BC 19-Apr-95

DATE:

4230

BUILDING NO.: BLDG. TYPE:

MINI MALL

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	1077.5	1077.5	1079.3	848.0	848.0	
COOLING (kWH)	25747	25747	22538	16751	16751	

SUPPLY AIR FAN	9375 CFM
FLOOR AREA	10220 FT ²
CFMI	2072.7 CFM
UA	BTU/HR • °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

EZDOE RUN DEFINITION:						
BASERUN	EXISTING OPERATION					
RUN1	NIGHT SETBACK					
RUN2	ECONOMIZER					
RUN3	DDC					
RUN4	FORCED VENTILATION					
RUN5						

HOURS OF	OCCUPANCY				ANNUAL HEATING & CO	OLING HOURS
M-F	0	2400	120	HR	HR. ON HEATING	5376 HR/YR
SAT.	0	2400	24	HR	HR. ON COOLING	3360 HR/YR
SUN.	0	2400	24	HR	HR. OFF HEATING	5376 HR/YR
M-F SAT.	TOTAL OCCUI	PY HR.	168	HR/WK	HR. OFF COOLING	0 HR/YR
	TOTAL UNOC	C. HR.	0	HR/WK		
	ANNUAL OCC	UPY HR.	8760	HR/YR		
	ANNUAL UNO	CC. HR.	0	HR/YR	7	

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 5376 = 0 HR/YR HOUR SAVE (COOLING ONL 3360 - 3360 = 0 HR/YR

HOAUHC	1077.519 MBtu -	1077.519 MBtu	=	0.00E+00 Btu/CFM-HR	
	2072.7 CFM *	0 HR/YR			
HOAUH	1077.519 MBtu -	1077.519 MBtu	=	0.00E+00 Btu/CFM-HR	
	2072.7 CFM *	0 HR/YR			
COAUHC	25747.16 kWH -	25747.16 kWH	_ =	0.00E+00 kWH/CFM-HR	
	2072.7 CFM *	0 HR/YR			
COAUC	25747.16 kWH -	25747.16 kWH	=	0.00E+00 kWH/CFM-HR	
	2072.7 CFM *	0 HR/YR			
HOAOHC	1077.519 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	2072.7 CFM *	8760 HR/YR			
HOAOH	1077.519 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	2072.7 CFM *	5376 HR/YR			
COAOHC	25747.16 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	2072.7 CFM *	8760 HR/YR			
COAOC	25747.16 kWH	0 kWH	_ =	0.00E+00 kWH/CFM-HR	
	2072.7 CFM *	3360 HR/YR		0.000	
DC	1/6 (10 MINUTES PER	R HOUR)	=	0.17	
DC DEMAND	1/6 (10 MINUTES PER	R HOUR)	=	0.17	

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

G

CHECKED BY: DATE:

BC 19-Apr-95

BUILDING NO.:

4230

BLDG. TYPE:

MINI MALL

ECC	25747.16 kWH -	22538.34 kWH	=	1.02E-04 kWH/CFM-HR	
	9375 CFM *	3360 HR/YR	7		
ECHC	25747.16 kWH -	22538.34 kWH	=	3.91E-05 kWH/CFM-HR	
	9375 CFM *	8760 HR/YR			
NSUCHC	25747.16 kWH -	25747.16 kWH	=	0.00E+00 kWH/CFM-HR	
	9375 CFM *	0 HR/YR			
NSUCC	25747.16 kWH -	25747.16 kWH	=	0.00E+00 kWH/CFM-HR	
	9375 CFM *	0 HR/YR			
DDCCHC	22538.34 kWH -	16750.61 kWH	=	7.05E-05 kWH/CFM-HR	
	9375 CFM *	8760 HR/YR			
DDCCC	22538.34 kWH -	16750.61 kWH	=	1.84E-04 kWH/CFM-HR	
	9375 CFM *	3360 HR/YR			
NSC	1077.519 MBtu -	1077.519 MBtu	=	0.00E+00 Btu/ft^2	
	10220	AREA			
DSC	1079.306 MBtu -	848.0195 MBtu	=	2.26E+04 Btu/ft^2	
	10220	AREA			
FV	848.0195 MBtu -	848.0195 MBtu	=	0.00E+00 Btu/CFM-HR	
	2072.7 CFM *	0 HR/YR	1		
CHWR	(0.915 kW X 0.012 Eff. 2	X 436 HRS X 2 Degrees	of Reset)		
			= _	9.6 kWH/TON	
OAR	740 HR/YR *	0.01	=	7.4 HR/YR	

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

BG

CHECKED BY:

BC 19-Apr-95

DATE:

4305

BUILDING NO.: BLDG. TYPE:

PHYS FIT CENTER

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	4012.6	2273.6	2273.6	1959.7	1959.7	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	67970 CFM
FLOOR AREA	32157 FT ²
CFMI	8305.9 CFM
UA	BTU/HR • °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

EZDOE RUI	N DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	ECONOMIZER
RUN3	DDC
RUN4	FORCED VENTILATION
RUN5	

HOURS OF	OCCUPANCY		ANNUAL HEATING & COOLING HOURS			
M-F	645	2000	67.75	HR	HR. ON HEATING	2168 HR/YR
SAT.	0	0	0	HR	HR. ON COOLING	1355 HR/YR
SUN.	0	0	0	HR	HR. OFF HEATING	3208 HR/YR
	TOTAL OCCU	PY HR.	67.75	HR/WK	HR. OFF COOLING	2005 HR/YR
	TOTAL UNOC	C. HR.	100.25	HR/WK		
	ANNUAL OCC	UPY HR.	3533	HR/YR		
	ANNUAL UNO	CC. HR.	5227	HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 2168 = 3208 HR/YR HOUR SAVE (COOLING ONL 3360 - 1355 = 2005 HR/YR

HOAUHC	4012.611 MBtu -	2273.579 MBtu	=	0.00E+00 Btu/CFM-HR	
Ī	8305.9 CFM *	5227 HR/YR			
HOAUH	4012.611 MBtu -	2273.579 MBtu	=	0.00E+00 Btu/CFM-HR	
	8305.9 CFM *	3208 HR/YR			
COAUHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
1	8305.9 CFM *	5227 HR/YR			
COAUC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	8305.9 CFM *	2005 HR/YR			
HOAOHC	4012.611 MBtu -	1739.032 MBtu] =	7.75E+01 Btu/CFM-HR	
	8305.9 CFM *	3533 HR/YR			
НОАОН	4012.611 MBtu -	1739.032 MBtu	=	1.26E+02 Btu/CFM-HR	
	8305.9 CFM *	2168 HR/YR			
COAOHC	0 kWH	0 kWH] =	0.00E+00 kWH/CFM-HR	
	8305.9 CFM *	3533 HR/YR			
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	8305.9 CFM *	1355 HR/YR			
DC	1 / 6 (10 MINUTES PE	R HOUR)	=	0.17	
DC DEMAND	1/6 (10 MINUTES PE	R HOUR)	=	0.17	

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY: BG

CHECKED BY:

BC

DATE:

19-Apr-95 4305

BUILDING NO.: BLDG. TYPE:

PHYS FIT CENTER

ECC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	67970 CFM *	1355 HR/YR		
ECHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	67970 CFM *	3533 HR/YR		
NSUCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	67970 CFM *	5227 HR/YR	}	
NSUCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	67970 CFM *	3208 HR/YR		
DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	67970 CFM *	3533 HR/YR		
DDCCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	67970 CFM *	1355 HR/YR		
NSC	4012.611 MBtu -	2273.579 MBtu	=	5.41E+04 Btu/ft^2
ļ	32157	7 AREA		
DSC	2273.579 MBtu -	1959.736 MBtu	=	9.76E+03 Btu/ft^2
	32157	7 AREA		
FV	1959.736 MBtu -	1959.736 MBtu	=	0.00E+00 Btu/CFM-HR
	8305.9 CFM *	160 HR/YR	1	
CHWR	(0.915 kW X 0.012 Eff.	X 436 HRS X 2 Degrees	of Reset)	
			=	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

BG

CHECKED BY:

BC 19-Apr-95

DATE:

4530

BUILDING NO.: BLDG, TYPE:

SMA BLDNG

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	55808.2	40021.3	40021.3	38893.5	38893.5	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	135905	CFM
FLOOR AREA	195670	FT ²
CFMI	81108.5	CFM
UA		BTU/HR • °F
BUILDING CONST	2	(1 FOR LIGHT)
		(2 FOR HEAVY)

EZDOE RUN DEFINITION:						
BASERUN	EXISTING OPERATION					
RUN1	NIGHT SETBACK					
RUN2	ECONOMIZER					
RUN3	DDC					
RUN4	FORCED VENTILATION					
RUN5						

HOURS OF	OCCUPANCY		ANNUAL HEATING & CO	DLING HOURS		
M-F	730	1630	45	HR	HR. ON HEATING	2016 HR/YR
SAT.	730	1630	9	HR	HR. ON COOLING	1260 HR/YR
SUN.	730	1630	9	HR	HR. OFF HEATING	3360 HR/YR
	TOTAL OCCU	PY HR.	63	HR/WK	HR. OFF COOLING	2100 HR/YR
	TOTAL UNOC		105	HR/WK		
	ANNUAL OCC	UPY HR.	3285	HR/YR		
	ANNUAL UNO	CC HR	5475	HR/YR	7	

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING	8760 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY	5376 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY	3360 HR/YR

HOUR SAVE (HEATING ONL	5376	-	2016	=	3360 HR/YR
HOUR SAVE (COOLING ONL	3360	-	1260	=	2100 HR/YR

HOAUHC	55808.2 MBtu -	40021.3 MBtu	=	0.00E+00 Btu/CFM-HR	
	81108.5 CFM *	5475 HR/YR			
HOAUH	55808.2 MBtu -	40021.3 MBtu	_ =	0.00E+00 Btu/CFM-HR	
	81108.5 CFM *	3360 HR/YR			
COAUHC	0 kWH -	0 kWH_	_ = .	0.00E+00 kWH/CFM-HR	
	81108.5 CFM *	5475 HR/YR			<u>-</u>
COAUC	0 kWH -	0 kWH	_ = '	0.00E+00 kWH/CFM-HR	
	81108.5 CFM *	2100 HR/YR			
HOAOHC	55808.2 MBtu -	15786.9 MBtu	=	1.50E+02 Btu/CFM-HR	
	81108.5 CFM *	3285 HR/YR			
НОАОН	55808.2 MBtu -	15786.9 MBtu	=	2.45E+02 Btu/CFM-HR	
	81108.5 CFM *	2016 HR/YR			
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	81108.5 CFM *	3285 HR/YR			
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	81108.5 CFM *	1260 HR/YR			
DC	1/6 (10 MINUTES PER	R HOUR)	=	0.17	
DC DEMAND	1 / 6 (10 MINUTES PER	R HOUR)	=	0.17	

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

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CHECKED BY:

ВС

DATE:

19-Apr-95 4530

BUILDING NO.: BLDG. TYPE:

SMA BLDNG

ECC					
135905 CFM * 1260 HR/YR	ECC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
NSUCHC		135905 CFM *	1260 HR/YR	7	
NSUCHC	ECHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
135905 CFM * 5475 HR/YR NSUCC		135905 CFM *	3285 HR/YR	7	
NSUCC	NSUCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
135905 CFM * 3360 HR/YR DDCCHC		135905 CFM *	5475 HR/YR]	
DDCCHC	NSUCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
135905 CFM * 3285 HR/YR DDCCC		135905 CFM *	3360 HR/YR	1	
DDCCC	DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
135905 CFM * 1260 HR/YR NSC 55808.2 MBtu - 40021.3 MBtu = 8.07E+04 Btu/ft^2 195670 AREA DSC 40021.3 MBtu - 38893.5 MBtu = 5.76E+03 Btu/ft^2 195670 AREA FV 38893.5 MBtu - 38893.5 MBtu = 0.00E+00 Btu/CFM-HR 81108.5 CFM * 224 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		135905 CFM *	3285 HR/YR	7	
135905 CFM * 1260 HR/YR NSC 55808.2 MBtu - 40021.3 MBtu = 8.07E+04 Btu/ft^2 195670 AREA DSC 40021.3 MBtu - 38893.5 MBtu = 5.76E+03 Btu/ft^2 195670 AREA FV 38893.5 MBtu - 38893.5 MBtu = 0.00E+00 Btu/CFM-HR 81108.5 CFM * 224 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	DDCCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
195670 AREA DSC 40021.3 MBtu - 38893.5 MBtu = 5.76E+03 Btu/ft^2 195670 AREA FV 38893.5 MBtu - 38893.5 MBtu = 0.00E+00 Btu/CFM-HR 81108.5 CFM * 224 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		135905 CFM *	1260 HR/YR	1	
DSC 40021.3 MBtu - 38893.5 MBtu = 5.76E+03 Btu/ft^2 195670 AREA FV 38893.5 MBtu - 38893.5 MBtu = 0.00E+00 Btu/CFM-HR 81108.5 CFM * 224 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	NSC	55808.2 MBtu -	40021.3 MBtu	=	8.07E+04 Btu/ft^2
195670 AREA FV 38893.5 MBtu - 38893.5 MBtu = 0.00E+00 Btu/CFM-HR 81108.5 CFM * 224 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		19567	O AREA		
FV 38893.5 MBtu - 38893.5 MBtu = 0.00E+00 Btu/CFM-HR 81108.5 CFM * 224 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	DSC	40021.3 MBtu -	38893.5 MBtu	=	5.76E+03 Btu/ft^2
81108.5 CFM * 224 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON		19567	O AREA	1	
CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6 kWH/TON	FV	38893.5 MBtu -	38893.5 MBtu	=	0.00E+00 Btu/CFM-HR
= 9.6 kWH/TON		81108.5 CFM *	224 HR/YR	1	
= 9.6 kWH/TON	CHWR	(0.915 kW X 0.012 Eff.	X 436 HRS X 2 Degrees	of Reset)	
OAR 740 HR/YR * 0.01 = 7.4 HR/YR		l		= '	9.6 kWH/TON
	OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

BG

CHECKED BY:

BC

DATE:

19-Apr-95 10000

BUILDING NO.: BLDG. TYPE:

DIV CMD/CNTRL BUILDING

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	8226.9	3436.1	3436.1	2737.0	2617.8	
COOLING (kWH)	8726	3049	3049	3049	3049	

SUPPLY AIR FAN	130236	CFM
FLOOR AREA	80294	FT ²
CFMI	121133	CFM
UA		BTU/HR • °F
BUILDING CONST	2	(1 FOR LIGHT)
		(2 FOR HEAVY)

EZDOE RUN DEFINITION:						
BASERUN	EXISTING OPERATION					
RUN1	NIGHT SETBACK					
RUN2	ECONOMIZER					
RUN3	DDC					
RUN4	FORCED VENTILATION					
RUN5						

HOURS OF	OCCUPANCY		ANNUAL HEATING & CO	OLING HOURS	
M-F	600	1800	60 HR	HR. ON HEATING	1920 HR/YR
SAT.	0	0	0 HR	HR. ON COOLING	1200 HR/YR
SUN.	0	0	0 HR	HR. OFF HEATING	3456 HR/YR
00.1.	TOTAL OCCUP	PY HR.	60 HR/WK	HR. OFF COOLING	2160 HR/YR
	TOTAL UNOC		108 HR/WK		
	ANNUAL OCC	JPY HR.	3129 HR/YR		
	ANNUAL UNO		5631 HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY

3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 1920 = 3456 HR/YR HOUR SAVE (COOLING ONL 3360 - 1200 = 2160 HR/YR

8226.9 MBtu -	3436.1 MI	Btu	=	0.00E+00 Btu/CFM-HR
121133 CFM *	5631 HF	R/YR		
8226.9 MBtu -	3436.1 MI	Btu	=	0.00E+00 Btu/CFM-HR
121133 CFM *	3456 HF	R/YR		
8726.062 kWH -	3048.668 kV	WH	=	8.32E-06 kWH/CFM-HR
121133 CFM *	5631 HF	R/YR		
8726.062 kWH -	3048.668 kV	WH	=	2.17E-05 kWH/CFM-HR
121133 CFM *	2160 HF	R/YR		
8226.9 MBtu -	4790.8 M	lBtu	=	9.07E+00 Btu/CFM-HR
121133 CFM *	3129 H	R/YR		
8226.9 MBtu -	4790.8 M	1Btu	=	1.48E+01 Btu/CFM-HR
121133 CFM *	1920 H	R/YR		
8726.062 kWH	5677.394 kV	WH	=	8.04E-06 kWH/CFM-HR
121133 CFM *	3129 HI	IR/YR		
8726.062 kWH	5677.394 kV	WH	=	2.10E-05 kWH/CFM-HR
121133 CFM *	1200 H	IR/YR		
1 / 6 (10 MINUTES PER	R HOUR)		=	0.17
1/6 (10 MINUTES PER	R HOUR)		=	0.17
	121133 CFM * 8226.9 MBtu - 121133 CFM * 8726.062 kWH - 121133 CFM * 8726.062 kWH - 121133 CFM * 8226.9 MBtu - 121133 CFM * 8226.9 MBtu - 121133 CFM * 8726.062 kWH 121133 CFM * 8726.062 kWH 121133 CFM *	121133 CFM * 5631 H 8226.9 MBtu - 3436.1 M 121133 CFM * 3456 H 8726.062 kWH - 3048.668 k 121133 CFM * 5631 H 8726.062 kWH - 3048.668 k 121133 CFM * 2160 H 8226.9 MBtu - 4790.8 M 121133 CFM * 3129 H 8226.9 MBtu - 4790.8 M 121133 CFM * 1920 H 8726.062 kWH 5677.394 k 121133 CFM * 3129 H 8726.062 kWH 5677.394 k	121133 CFM * 5631 HR/YR 8226.9 MBtu - 3436.1 MBtu 121133 CFM * 3456 HR/YR 8726.062 kWH - 3048.668 kWH 121133 CFM * 5631 HR/YR 8726.062 kWH - 3048.668 kWH 121133 CFM * 2160 HR/YR 8226.9 MBtu - 4790.8 MBtu 121133 CFM * 3129 HR/YR 8226.9 MBtu - 4790.8 MBtu 121133 CFM * 1920 HR/YR 8726.062 kWH 5677.394 kWH 121133 CFM * 3129 HR/YR 8726.062 kWH 5677.394 kWH 121133 CFM * 3129 HR/YR 8726.062 kWH 5677.394 kWH 121133 CFM * 1200 HR/YR	121133 CFM * 5631 HR/YR 8226.9 MBtu - 3436.1 MBtu = 121133 CFM * 3456 HR/YR 8726.062 kWH - 3048.668 kWH = 121133 CFM * 5631 HR/YR 8726.062 kWH - 3048.668 kWH = 121133 CFM * 2160 HR/YR 8226.9 MBtu - 4790.8 MBtu = 121133 CFM * 3129 HR/YR 8226.9 MBtu - 4790.8 MBtu = 121133 CFM * 1920 HR/YR 8726.062 kWH 5677.394 kWH = 121133 CFM * 3129 HR/YR 8726.062 kWH 5677.394 kWH = 121133 CFM * 1200 HR/YR 8726.062 kWH 5677.394 kWH = 121133 CFM * 1200 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

BG

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BC

DATE:

19-Apr-95 10000

BUILDING NO.: BLDG. TYPE:

DIV CMD/CNTRL BUILDING

ECC	3048.668 kWH -	3048.668 kWH	=	0.00E+00 kWH/CFM-HR
	130236 CFM *	1200 HR/YR		
ECHC	3048.668 kWH -	3048.668 kWH	=	0.00E+00 kWH/CFM-HR
	130236 CFM *	3129 HR/YR		
NSUCHC	8726.062 kWH -	3048.668 kWH	=	7.74E-06 kWH/CFM-HR
	130236 CFM *	5631 HR/YR		
NSUCC	8726.062 kWH -	3048.668 kWH	=	1.26E-05 kWH/CFM-HR
	130236 CFM *	3456 HR/YR		
DDCCHC	3048.668 kWH -	3048.668 kWH	=	0.00E+00 kWH/CFM-HR
	130236 CFM *	3129 HR/YR		
DDCCC	3048.668 kWH -	3048.668 kWH	=	0.00E+00 kWH/CFM-HR
	130236 CFM *	1200 HR/YR	1	
NSC	8226.9 MBtu -	3436.1 MBtu	=	5.97E+04 Btu/ft^2
	80294	AREA		
DSC	3436.1 MBtu -	2737 MBtu	=	8.71E+03 Btu/ft^2
	80294	AREA		
FV	2737 MBtu -	2617.8 MBtu	=	6.15E+00 Btu/CFM-HR
	121133 CFM *	160 HR/YR		
CHWR	(0.915 kW X 0.012 Eff.)	436 HRS X 2 Degrees	of Reset)	
			= '	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

ВС

CHECKED BY: DATE:

19-Apr-95

DATE:

10205

BUILDING NO.: BLDG. TYPE:

DENTAL CLINIC

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	2048.8	1046.1	1046.1	965.3	965.3	
COOLING (kWH)	57394	23966	23966	21599	21599	

SUPPLY AIR FAN	10430 CFM	
FLOOR AREA	18546 FT ²	
CFMI	3129 CFM	
UA	BTU/H	IR • °F
BUILDING CONST	2 (1 FOI	R LIGHT)
	(2 FOI	R HEAVY)

EZDOE RUN DEFINITION:					
BASERUN	EXISTING OPERATION				
RUN1	NIGHT SETBACK				
RUN2	ECONOMIZER				
RUN3	DDC				
RUN4	FORCED VENTILATION				
RUN5					

HOURS OF	OCCUPANCY		ANNUAL HEATING & COOLING HOURS			
M-F	700	1600	45 HF	₹	HR. ON HEATING	1440 HR/YR
SAT.	0	0	0 HF	₹	HR. ON COOLING	900 HR/YR
SUN.	0	0	0 HF	₹	HR. OFF HEATING	3936 HR/YR
	TOTAL OCCUPY HR.		45 HF	R/WK	HR. OFF COOLING	2460 HR/YR
	TOTAL UNOCC. HR.		123 HF	R/WK		
	ANNUAL OCC	ANNUAL OCCUPY HR.		R/YR		
	ANNUAL UNOCC, HR.		6414 HF	R/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 1440 = 3936 HR/YR HOUR SAVE (COOLING ONL 3360 - 900 = 2460 HR/YR

HOAUHC	2048.838 MBtu -	1046.061	MBtu	=	0.00E+00 Btu/CFM-HR
	3129 CFM *	6414	HR/YR		
HOAUH	2048.838 MBtu -	1046.061	MBtu	=	0.00E+00 Btu/CFM-HR
	3129 CFM *	3936	HR/YR		
COAUHC	57393.7 kWH -	23965.64	kWH	=	1.67E-03 kWH/CFM-HR
	3129 CFM *	6414	HR/YR		
COAUC	57393.7 kWH -	23965.64	kWH	=	4.34E-03 kWH/CFM-HR
	3129 CFM *	2460	HR/YR		
HOAOHC	2048.838 MBtu -	1002.778	MBtu	=	1.42E+02 Btu/CFM-HR
	3129 CFM *	2346	HR/YR		
НОАОН	2048.838 MBtu -	1002.778	MBtu	=	2.32E+02 Btu/CFM-HR
	3129 CFM *	1440	HR/YR		
COAOHC	57393.7 kWH	33428.06	kWH	=	3.26E-03 kWH/CFM-HR
	3129 CFM *	2346	HR/YR		
COAOC	57393.7 kWH	33428.06	kWH	=	8.51E-03 kWH/CFM-HR
	3129 CFM *	900	HR/YR		
DC	1/6 (10 MINUTES PE	=	0.17		
	1 / 6 (10 MINUTES PE			=	0.17

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

3G

CHECKED BY: DATE:

19-Apr-95

BUILDING NO.: BLDG. TYPE:

10205 DENTAL CLINIC

10430 CFM * 900 HR/YR ECHC 23965.64 kWH - 23965.64 kWH = 0 10430 CFM * 2346 HR/YR	
ECHC 23965.64 kWH - 23965.64 kWH = 0 10430 CFM * 2346 HR/YR	0.00E+00 kWH/CFM-HR
10430 CFM * 2346 HR/YR NSUCHC 57393.7 kWH - 23965.64 kWH = 5 10430 CFM * 6414 HR/YR NSUCC 57393.7 kWH - 23965.64 kWH = 8 10430 CFM * 3936 HR/YR DDCCHC 23965.64 kWH - 21599.32 kWH = 9 10430 CFM * 2346 HR/YR DDCCC 23965.64 kWH - 21599.32 kWH = 2 10430 CFM * 2346 HR/YR DDCCC 23965.64 kWH - 21599.32 kWH = 2 10430 CFM * 900 HR/YR NSC 2048.838 MBtu - 1046.061 MBtu = 5 18546 AREA DSC 1046.061 MBtu - 965.324 MBtu = 4 18546 AREA FV 965.324 MBtu - 965.324 MBtu = 0 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset)	
NSUCHC 57393.7 kWH - 23965.64 kWH = 5 10430 CFM * 6414 HR/YR NSUCC 57393.7 kWH - 23965.64 kWH = 8 10430 CFM * 3936 HR/YR DDCCHC 23965.64 kWH - 21599.32 kWH = 9 10430 CFM * 2346 HR/YR DDCCC 23965.64 kWH - 21599.32 kWH = 2 10430 CFM * 900 HR/YR NSC 23965.64 kWH - 21599.32 kWH = 2 10430 CFM * 900 HR/YR NSC 2048.838 MBtu - 1046.061 MBtu = 5 18546 AREA DSC 1046.061 MBtu - 965.324 MBtu = 4 18546 AREA FV 965.324 MBtu - 965.324 MBtu = 0 13129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 1 1046.061 MB	.00E+00 kWH/CFM-HR
10430 CFM * 6414 HR/YR NSUCC 57393.7 kWH - 23965.64 kWH = 8 10430 CFM * 3936 HR/YR DDCCHC 23965.64 kWH - 21599.32 kWH = 9 10430 CFM * 2346 HR/YR DDCCC 23965.64 kWH - 21599.32 kWH = 2 10430 CFM * 900 HR/YR NSC 2048.838 MBtu - 1046.061 MBtu = 5 18546 AREA DSC 1046.061 MBtu - 965.324 MBtu = 4 18546 AREA FV 965.324 MBtu - 965.324 MBtu = 0 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset)	
NSUCC 57393.7 kWH - 23965.64 kWH = 8 10430 CFM * 3936 HR/YR DDCCHC 23965.64 kWH - 21599.32 kWH = 9 10430 CFM * 2346 HR/YR DDCCC 23965.64 kWH - 21599.32 kWH = 2 10430 CFM * 900 HR/YR NSC 2048.838 MBtu - 1046.061 MBtu = 5 18546 AREA DSC 1046.061 MBtu - 965.324 MBtu = 4 18546 AREA FV 965.324 MBtu - 965.324 MBtu = 0 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) =	5.00E-04 kWH/CFM-HR
10430 CFM * 3936 HR/YR DDCCHC 23965.64 kWH - 21599.32 kWH = 9 10430 CFM * 2346 HR/YR DDCCC 23965.64 kWH - 21599.32 kWH = 2 10430 CFM * 900 HR/YR NSC 2048.838 MBtu - 1046.061 MBtu = 5 18546 AREA DSC 1046.061 MBtu - 965.324 MBtu = 4 18546 AREA FV 965.324 MBtu - 965.324 MBtu = 0 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset)	
DDCCHC 23965.64 kWH - 21599.32 kWH = 90 10430 CFM * 2346 HR/YR DDCCC 23965.64 kWH - 21599.32 kWH = 2 10430 CFM * 900 HR/YR NSC 2048.838 MBtu - 1046.061 MBtu = 5 18546 AREA DSC 1046.061 MBtu - 965.324 MBtu = 4 18546 AREA FV 965.324 MBtu - 965.324 MBtu = 0 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) =	3.14E-04 kWH/CFM-HR
10430 CFM * 2346 HR/YR DDCCC 23965.64 kWH - 21599.32 kWH = 2 10430 CFM * 900 HR/YR NSC 2048.838 MBtu - 1046.061 MBtu = 5. 18546 AREA DSC 1046.061 MBtu - 965.324 MBtu = 4. 18546 AREA FV 965.324 MBtu - 965.324 MBtu = 0. 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) =	
DDCCC 23965.64 kWH - 21599.32 kWH = 2 10430 CFM * 900 HR/YR NSC 2048.838 MBtu - 1046.061 MBtu = 5. 18546 AREA DSC 1046.061 MBtu - 965.324 MBtu = 4. 18546 AREA FV 965.324 MBtu - 965.324 MBtu = 0. 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) =	9.67E-05 kWH/CFM-HR
10430 CFM * 900 HR/YR NSC 2048.838 MBtu - 1046.061 MBtu = 5. 18546 AREA DSC 1046.061 MBtu - 965.324 MBtu = 4. 18546 AREA FV 965.324 MBtu - 965.324 MBtu = 0. 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) =	
NSC 2048.838 MBtu - 1046.061 MBtu = 5. 18546 AREA DSC 1046.061 MBtu - 965.324 MBtu = 4. 18546 AREA FV 965.324 MBtu - 965.324 MBtu = 0. 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) =	2.52E-04 kWH/CFM-HR
18546 AREA DSC 1046.061 MBtu - 965.324 MBtu = 4. 18546 AREA FV 965.324 MBtu - 965.324 MBtu = 0. 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) =	
DSC 1046.061 MBtu - 965.324 MBtu = 4. 18546 AREA FV 965.324 MBtu - 965.324 MBtu = 0. 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) =	.41E+04 Btu/ft^2
T8546 AREA FV 965.324 MBtu - 965.324 MBtu = 0. 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) =	
FV 965.324 MBtu - 965.324 MBtu = 0. 3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) =	.35E+03 Btu/ft^2
3129 CFM * 160 HR/YR CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) =	
CHWR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) =	.00E+00 Btu/CFM-HR
= '	
1 OAD 740 HDA/D + 0.04	9.6 kWH/TON
OAR 740 HR/YR * 0.01 =	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

BG

CHECKED BY:

BC

DATE:

19-Apr-95 10207

BUILDING NO.: BLDG. TYPE:

EXCHANGE CLUB

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	1760.6	1177.3	1173.4	957.9	872.4	
COOLING (kWH)	131939	91160	77614	77631	82302	

SUPPLY AIR FAN	17100	CFM
FLOOR AREA	18199	FT ²
CFMI	5985	CFM
UA		BTU/HR • °F
BUILDING CONST	2	(1 FOR LIGHT)
		(2 FOR HEAVY)

EZDOE RUN DEFINITION:								
BASERUN	EXISTING OPERATION							
RUN1	NIGHT SETBACK							
RUN2	ECONOMIZER							
RUN3	DDC							
RUN4	FORCED VENTILATION							
RUN5								

HOURS OF OCCUPANCY					ANNUAL HEATING & CO	DLING HOURS
M-F		2700	95	HR	HR. ON HEATING	4256 HR/YR
SAT.	800	2700	19	HR	HR. ON COOLING	2660 HR/YR
SUN.	800	2700	19	HR	HR. OFF HEATING	1120 HR/YR
	TOTAL OCCUPY H	R.	133	HR/WK	HR. OFF COOLING	700 HR/YR
	TOTAL UNOCC. HI	₹.	35	HR/WK		
	ANNUAL OCCUPY	HR.	6935	HR/YR		
	ANNUAL UNOCC.	HR.	1825	HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING	8760 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY	5376 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY	3360 HR/YR

HOUR SAVE (HEATING ONL	5376	_	4256	=	1120 HR/YR
HOUR SAVE (COOLING ONL	3360	-	2660	=	700 HR/YR

HOAUHC	1760.626 MBtu -	1177.3 MBtu	=	0.00E+00 Btu/CFM-HR		
ļ	5985 CFM *	1825 HR/YR				
HOAUH	1760.626 MBtu -	1177.3 MBtu	=	0.00E+00 Btu/CFM-HR		
	5985 CFM *	1120 HR/YR				
COAUHC	131938.9 kWH -	91159.89 kWH	= -	3.73E-03 kWH/CFM-HR		
	5985 CFM *	1825 HR/YR				
COAUC	131938.9 kWH -	91159.89 kWH	_ = -	9.73E-03 kWH/CFM-HR		
	5985 CFM *	700 HR/YR				
HOAOHC	1760.626 MBtu -	583.3258 MBtu	=	2.84E+01 Btu/CFM-HR		
	5985 CFM *	6935 HR/YR				
НОАОН	1760.626 MBtu -	583.3258 MBtu	_ =	4.62E+01 Btu/CFM-HR		
	5985 CFM *	4256 HR/YR				
COAOHC	131938.9 kWH	40779.02 kWH	=	2.20E-03 kWH/CFM-HR		
	5985 CFM *	6935 HR/YR				
COAOC	131938.9 kWH	40779.02 kWH	=	5.73E-03 kWH/CFM-HR		
	5985 CFM *	2660 HR/YR				
DC	1 / 6 (10 MINUTES PE	R HOUR)	=	0.17		
DC DEMAND	1 / 6 (10 MINUTES PE	R HOUR)	=	0.17		

JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY: CHECKED BY:

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DATE:

19-Apr-95

BUILDING NO.: BLDG. TYPE:

10207 EXCHANGE CLUB

ECC	91159.89 kWH -	77614.48 kWH	=	2.98E-04 kWH/CFM-HR
	17100 CFM *	2660 HR/YR		
ECHC	91159.89 kWH -	77614.48 kWH	=	1.14E-04 kWH/CFM-HR
	17100 CFM *	6935 HR/YR		
NSUCHO	131938.9 kWH -	91159.89 kWH	=	1.31E-03 kWH/CFM-HR
	17100 CFM *	1825 HR/YR		
NSUCC	131938.9 kWH -	91159.89 kWH	=	2.13E-03 kWH/CFM-HR
	17100 CFM *	1120 HR/YR		
DDCCHC	77614.48 kWH -	77630.94 kWH	=	-1.39E-07 kWH/CFM-HR
	17100 CFM *	6935 HR/YR		
DDCCC	77614.48 kWH -	77630.94 kWH	=	-3.62E-07 kWH/CFM-HR
	17100 CFM *	2660 HR/YR		
NSC	1760.626 MBtu -	1177.3 MBtu	=	3.21E+04 Btu/ft^2
	18199	AREA		
DSC	1173.445 MBtu -	957.8528 MBtu	=	1.18E+04 Btu/ft^2
	18199	AREA		
FV	957.8528 MBtu -	872.4362 MBtu	=	6.37E+01 Btu/CFM-HR
	5985 CFM *	224 HR/YR		
CHWR	(0.915 kW X 0.012 Eff.	X 436 HRS X 2 Degrees	of Reset)	
			=	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CHECKED BY: DATE:

вс 19-Apr-95

10506

BUILDING NO.: BLDG. TYPE:

CLINIC W/O BEDS

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	1373.3	896.4	896.4	826.4	826.4	
COOLING (kWH)	16887	8247	8247	4216	4216	

SUPPLY AIR FAN	9300	CFM	
FLOOR AREA	18386	FT ²	
CFMI	1953	CFM	
UA		BTU/HR • °F	
BUILDING CONST	2	(1 FOR LIGHT)	
		(2 FOR HEAVY)	

EZDOE RUN DEFINITION:							
BASERUN	EXISTING OPERATION						
RUN1	NIGHT SETBACK						
RUN2	ECONOMIZER						
RUN3	DDC						
RUN4	FORCED VENTILATION						
RUN5							

HOURS OF OCCUPANCY				ANNUAL HEATING & CO	OLING HOURS	
M-F	700	1600	45	HR	HR. ON HEATING	2016 HR/YR
SAT.	700	1600	9	HR	HR. ON COOLING	1260 HR/YR
SUN.	700	1600	9	HR	HR. OFF HEATING	3360 HR/YR
	TOTAL OCCUPY HR.	63	HR/WK	HR. OFF COOLING	2100 HR/YR	
	TOTAL UNOCC	. HR.	105	HR/WK		
	ANNUAL OCCU	JPY HR.	3285	HR/YR		
	ANNUAL UNO	C. HR.	5475	HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING 8760 HR/YR PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY 5376 HR/YR PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY 3360 HR/YR

2016 3360 HR/YR HOUR SAVE (HEATING ONL 5376 1260 2100 HR/YR HOUR SAVE (COOLING ONL 3360

HOAUHC	1373.334 MBtu -		=	0.00E+00 Btu/CFM-HR		
	1953 CFM *	5475 HR/YR				
HOAUH	1373.334 MBtu -	896.4166 MBtu	=	0.00E+00 Btu/CFM-HR		
	1953 CFM *	3360 HR/YR				
COAUHC	16887.43 kWH -	8247.059 kWH	=	8.08E-04 kWH/CFM-HR		
	1953 CFM *	5475 HR/YR				
COAUC	16887.43 kWH -	8247.059 kWH	=	2.11E-03 kWH/CFM-HR		
	1953 CFM *	2100 HR/YR				
HOAOHC	1373.334 MBtu -	476.9169 MBtu	=	1.40E+02 Btu/CFM-HR		
	1953 CFM *	3285 HR/YR				
HOAOH	1373.334 MBtu -	476.9169 MBtu	=	2.28E+02 Btu/CFM-HR		
	1953 CFM *	2016 HR/YR				
COAOHC	16887.43 kWH	8640.368 kWH	=	1.29E-03 kWH/CFM-HR		
}	1953 CFM *	3285 HR/YR				
COAOC	16887.43 kWH	8640.368 kWH	=	3.35E-03 kWH/CFM-HR		
	1953 CFM *	1260 HR/YR				
DC	1 / 6 (10 MINUTES PEI	=	0.17			
DC DEMAND	1/6 (10 MINUTES PE	R HOUR)	=	0.17		
L						

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY: CHECKED BY:

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DATE:

19-Apr-95 10506

BUILDING NO.: BLDG. TYPE:

CLINIC W/O BEDS

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ECC	8247.059 kWH -	8247.059 kWH	=	0.00E+00 kWH/CFM-HR	
	9300 CFM *	1260 HR/YR			
ECHC	8247.059 kWH -	8247.059 kWH	=	0.00E+00 kWH/CFM-HR	
	9300 CFM *	3285 HR/YR			
NSUCHC	16887.43 kWH -	8247.059 kWH	=	1.70E-04 kWH/CFM-HR	
	9300 CFM *	5475 HR/YR			
NSUCC	16887.43 kWH -	8247.059 kWH	=	2.77E-04 kWH/CFM-HR	
	9300 CFM *	3360 HR/YR			
DDCCHC	8247.059 kWH -	4216.2 kWH	=	1.32E-04 kWH/CFM-HR	
	9300 CFM *	3285 HR/YR			
DDCCC	8247.059 kWH -	4216.2 kWH	=	3.44E-04 kWH/CFM-HR	
	9300 CFM *	1260 HR/YR			
NSC	1373.334 MBtu -	896.4166 MBtu	=	2.59E+04 Btu/ft^2	
	18386	3 AREA			
DSC	896.4166 MBtu -	826.3546 MBtu	=	3.81E+03 Btu/ft^2	
	18386	S AREA			
FV	826.3546 MBtu -	826.3546 MBtu	=	0.00E+00 Btu/CFM-HR	
	1953 CFM *	224 HR/YR			
CHWR	(0.915 kW X 0.012 Eff.)	X 436 HRS X 2 Degrees	of Reset)		
			=	9.6 kWH/TON	
OAR	740 HR/YR *	0.01	=	7.4 HR/YR	

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

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DATE:

19-Apr-95

BUILDING NO.:

10522A

BLDG. TYPE:

ADM & SUPPLY, BRK W/O DI

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	1444.8	729.2	729.2	643.3		
COOLING (kWH)	0	0	0	0		

SUPPLY AIR FAN	2310 CFM	
FLOOR AREA	14710 FT ²	
CFMI	2310 CFM	
UA	BTU/HR • °F	
BUILDING CONST	2 (1 FOR LIGHT)	
	(2 FOR HEAVY)	

EZDOE RUN DEFINITION:					
BASERUN	EXISTING OPERATION				
RUN1	NIGHT SETBACK				
RUN2	ECONOMIZER				
RUN3	DDC				
RUN4	FORCED VENTILATION				
RUN5					

HOURS OF OCCUPANCY				ANNUAL HEATING & COOLING HOURS		
M-F	600	1700	55	HR	HR. ON HEATING	1430 HR/YR
SAT.	0	0	0	HR	HR. ON COOLING	959 HR/YR
SUN.	0	0	0	HR	HR. OFF HEATING	2938 HR/YR
	TOTAL OCCUP	TOTAL OCCUPY HR.		55 HR/WK	HR. OFF COOLING	1969 HR/YR
	TOTAL UNOCO	C. HR.	113	HR/WK		
	ANNUAL OCCI		2868	HR/YR		
	ANNUAL UNO	CC. HR.	5892	HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING	8760 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY	5376 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY	3360 HR/YR

HOUR SAVE (HEATING ONL	5376	-	1430	=	3946 HR/YR
HOUR SAVE (COOLING ONL	3360	-	959	=	2401 HR/YR

HOAUHC	1444.8 MBtu -	729.2 MBtu	=	0.00E+00 Btu/CFM-HR
	2310 CFM *	5892 HR/YR		
HOAUH	1444.8 MBtu -	729.2 MBtu	=	0.00E+00 Btu/CFM-HR
	2310 CFM *	3946 HR/YR		
COAUHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	2310 CFM *	5892 HR/YR		
COAUC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	2310 CFM *	2401 HR/YR		
HOAOHC	1444.8 MBtu -	715.6 MBtu	=	1.10E+02 Btu/CFM-HR
	2310 CFM *	2868 HR/YR		
HOAOH	1444.8 MBtu -	715.6 MBtu	=	2.21E+02 Btu/CFM-HR
	2310 CFM *	1430 HR/YR		
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	2310 CFM *	2868 HR/YR		
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	2310 CFM *	959 HR/YR		
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17
	1 / 6 (10 MINUTES PER		=	0.17

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CALCULATED BY:

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DATE:

19-Apr-95

BUILDING NO.:

10522A

BLDG. TYPE:

ADM & SUPPLY, BRK W/O DI

ECC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	2310 CFM *	959 HR/YR		
ECHO	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	2310 CFM *	2868 HR/YR		
NSUCHO	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	2310 CFM *	5892 HR/YR		
NSUCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	2310 CFM *	3946 HR/YR		
DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	2310 CFM *	2868 HR/YR		
DDCCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	2310 CFM *	959 HR/YR		
NSC	1444.8 MBtu -	729.2 MBtu	=	4.86E+04 Btu/ft^2
	14710	AREA		
DSC	729.2 MBtu -	643.3 MBtu	=	5.84E+03 Btu/ft^2
	14710	AREA		
FV	643.3 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
	2310 CFM *	160 HR/YR		
CHWR	(0.915 kW X 0.012 Eff. X		of Reset)	
		ŭ	= ´	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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DATE:

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BUILDING NO.: BLDG. TYPE: 10522B ADM & SUPPLY, BRK W/O DI

ENERGY CONSTANT CALCULATIONS

BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu) 2166.1		2166.1	1757.2		
COOLING (kWH)	0	0		1	1

SUPPLY AIR FAN	2360	
FLOOR AREA	29176	
CFMI	2360	
UA		BTU/HR • °F
BUILDING CONST	2	(1 FOR LIGHT)
BOILDING CONC.		(2 FOR HEAVY)

í	EZDOE RUN DEFINITION:							
ļ	EZDUE KUI	EXISTING OPERATION						
Į		EXISTING OF EIGHTON						
		NIGHT SETBACK						
	RUN2	ECONOMIZER						
	RUN3	DDC						
		FORCED VENTILATION						
	RUN4	FORCED VENTILATION						
	RUN5							

HOURS OF OCCU M-F SAT. SUN.	0 0 0 TOTAL OCC	CC. HR.	120 HR 24 HR 24 HR 168 HR/WK 0 HR/WK	ANNUAL HEATING & CO HR. ON HEATING HR. ON COOLING HR. OFF HEATING HR. OFF COOLING	OLING HOURS 4368 HR/YR 2928 HR/YR 0 HR/YR 0 HR/YR
	TOTAL UNO ANNUAL OC ANNUAL UN	CC. HR. CUPY HR.	0 HR/WK 8760 HR/YR 0 HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 4368 = 1008 HR/YR HOUR SAVE (COOLING ONL 3360 - 2928 = 432 HR/YR

JUK SAVE (CCC)				
	2166.1 MBtu -	2166.1 MBtu	=	0.00E+00 Btu/CFM-HR
HOAUHC	2360 CFM *	0 HR/YR		OF NUMBER
HOAUH	2166.1 MBtu -	2166.1 MBtu	=	0.00E+00 Btu/CFM-HR
110/10/1	2360 CFM *	1008 HR/YR		0.00E+00 kWH/CFM-HR
COAUHC	0 kWH -	0 kWH	= .	0.00E+00 KVVIIIOI III III
	2360 CFM *	0 HR/YR	=	0.00E+00 kWH/CFM-HR
COAUC	0 kWH -	0 kWH 432 HR/YR	_	
	2360 CFM *	0 MBtu	=	0.00E+00 Btu/CFM-HR
НОАОНС	2166.1 MBtu - 2360 CFM *	8760 HR/YR	_	
1104011	2166.1 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
НОАОН	2360 CFM *	4368 HR/YR		2 225 22 HAVINGEM HP
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
CONOTIO	2360 CFM *	8760 HR/YR		0.00E+00 kWH/CFM-HR
COAOC	0 kWH	0 kWH	=	0.00E 00 KITTEO W.
	2360 CFM *	2928 HR/YR	+=	0.17
DC	1 / 6 (10 MINUTES PER	(HOUK)	=	0.17
DC DEMAND	1 / 6 (10 MINUTES PER	(HOUN)	1	

JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

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DATE:

19-Apr-95

BUILDING NO .: BLDG. TYPE:

10522B ADM & SUPPLY, BRK W/O DI

ECC	0 kWH -	0 kWH	=	0.005.00 1344.40514.45
	2360 CFM *	2928 HR/YR	_	0.00E+00 kWH/CFM-HR
ECHO	0 kWH -	0 kWH		0.005400 194/1/0544115
	2360 CFM *	8760 HR/YR		0.00E+00 kWH/CFM-HR
NSUCHO	O KVVIII "	0 kWH	=	0.00E+00 kWH/CFM-HR
	2360 CFM *	0 HR/YR	7	0.00LTOO KVVH/CFM-HR
NSUCC	0 117771	0 kWH		0.00E+00 kWH/CFM-HR
	2360 CFM *	1008 HR/YR	7	0.00E+00 KVVH/CFIVI-HR
DDCCHC	0 1(1111 -	0 kWH	=	0.00E+00 kWH/CFM-HR
	2360 CFM *	8760 HR/YR		0.00E TOO KVVII/CPIVI-AR
DDCCC		0 kWH	=	0.00E+00 kWH/CFM-HR
	2360 CFM *	2928 HR/YR		O.OOL.OO KAALIYCHINI-HK
NSC		2166.1 MBtu	T =	0.00E+00 Btu/ft^2
200	291	76 AREA	7	Signal to Bluff 2
DSC			=	1.40E+04 Btu/ft^2
E) (291	76 AREA	1	Wide of Blank 2
FV	1757.2 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR
CLIMID	2360 CFM *	0 HR/YR		or Blandi Milling
CHVVK	(0.915 KW X 0.012 Eff	X 436 HRS X 2 Degrees	of Reset)	
OAR	740 LIDAGD +		=	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

BG

CHECKED BY:

BC

DATE:

19-Apr-95 10550

BUILDING NO.: BLDG. TYPE:

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ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	4571.8	3110.5	3110.5	2582.6	2582.6	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	29710	CFM	
FLOOR AREA	15560	FT ²	
CFMI	17502.75	CFM	
UA		BTU/HR • °F	
BUILDING CONST	2	(1 FOR LIGHT)	
		(2 FOR HEAVY)	İ

EZDOE RUN DEFINITION:						
BASERUN	EXISTING OPERATION					
RUN1	NIGHT SETBACK					
RUN2	ECONOMIZER					
RUN3	DDC					
RUN4	FORCED VENTILATION					
RUN5						

HOURS OF	OCCUPANCY				ANNUAL HEATING & COOLING HOURS		
M-F	400	2400	100	HR	HR. ON HEATING	4480 HR/YR	
SAT.	400	2400	20	HR	HR. ON COOLING	2800 HR/YR	
SUN.	400	2400	20	HR	HR. OFF HEATING	896 HR/YR	
<u> </u>	TOTAL OCCUP	PY HR.	140	HR/WK	HR. OFF COOLING	560 HR/YR	
	TOTAL UNOC	C. HR.	28	HR/WK			
	ANNUAL OCC	JPY HR.	7300	HR/YR			
	ANNUAL UNO	CC. HR.	1460	HR/YR			

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 4480 = 896 HR/YR HOUR SAVE (COOLING ONL 3360 - 2800 = 560 HR/YR

HOAUHC	4571.76 MBtu -	3110.539 MBtu	=	0.00E+00 Btu/CFM-HR	
	17502.75 CFM *	1460 HR/YR			
HOAUH	4571.76 MBtu -	3110.539 MBtu	=	0.00E+00 Btu/CFM-HR	
	17502.75 CFM *	896 HR/YR			
COAUHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	17502.75 CFM *	1460 HR/YR			
COAUC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	17502.75 CFM *	560 HR/YR			
HOAOHC	4571.76 MBtu -	1461.221 MBtu	=	2.43E+01 Btu/CFM-HR	
	17502.75 CFM *	7300 HR/YR			
НОАОН	4571.76 MBtu -	1461.221 MBtu	=	3.97E+01 Btu/CFM-HR	
	17502.75 CFM *	4480 HR/YR			
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	17502.75 CFM *	7300 HR/YR			
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	17502.75 CFM *	2800 HR/YR			
DC	1 / 6 (10 MINUTES PER	R HOUR)	=	0.17	
DC DEMAND	1 / 6 (10 MINUTES PER	R HOUR)	=	0.17	

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

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10550

BUILDING NO.: BLDG. TYPE:

EN PER DIN

ECC	0 kWH -	. 0	kWH	=	0.00E+00 kWH/CFM-HR	
	29710 CFM *	2800	HR/YR			
ECHC	0 kWH -	0	kWH	=	0.00E+00 kWH/CFM-HR	
	29710 CFM *	7300	HR/YR			
NSUCHO	0 kWH -	0	kWH	=	0.00E+00 kWH/CFM-HR	
	29710 CFM *	1460	HR/YR			
NSUCC	0 kWH -	0	kWH	=	0.00E+00 kWH/CFM-HR	
	29710 CFM *	896	HR/YR			
DDCCHC	0 kWH -	0	kWH	=	0.00E+00 kWH/CFM-HR	
	29710 CFM *	7300	HR/YR			
DDCCC	0 kWH -	0	kWH	=	0.00E+00 kWH/CFM-HR	kWH/CFM-HR
	29710 CFM *	2800	HR/YR			
NSC	4571.76 MBtu -	3110.539	MBtu	=	9.39E+04 Btu/ft^2	
	15	560 AREA		Í		
DSC	3110.539 MBtu -	2582.611	MBtu	=	3.39E+04 Btu/ft^2	
	15	560 AREA				
FV	2582.611 MBtu -	2582.611	MBtu	=	0.00E+00 Btu/CFM-HR	
	17502.75 CFM *	224	HR/YR			
CHWR	(0.915 kW X 0.012 E	ff. X 436 HRS X	2 Degrees	of Reset)		
				=	9.6 kWH/TON	
OAR	740 HR/YR	* 0.01		=	7.4 HR/YR	
				<u> </u>		

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

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DATE:

19-Apr-95

BUILDING NO.: BLDG. TYPE: 10630 BN HQ BLDG

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	1429.0	651.2	651.2	590.9	2582.6	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	1440	CFM
FLOOR AREA	12452	FT ²
CFMI	1440	CFM
UA		BTU/HR • °F
BUILDING CONST	2	(1 FOR LIGHT)
		(2 FOR HEAVY)

EZDOE RU	N DEFINITION:	
BASERUN	EXISTING OPERATION	
RUN1	NIGHT SETBACK	
RUN2	ECONOMIZER	
RUN3	DDC	
RUN4	FORCED VENTILATION	
RUN5		

HOURS OF	OCCUPANCY			ANNUAL HEATING & COOLING HOURS		
M-F	600	1700	55	HR	HR. ON HEATING	1760 HR/YR
SAT.	0	0	0	HR	HR. ON COOLING	1100 HR/YR
SUN.	0	0	0	HR	HR. OFF HEATING	3616 HR/YR
	TOTAL OCCU	PY HR.	55	HR/WK	HR. OFF COOLING	2260 HR/YR
	TOTAL UNOC		113	HR/WK		
	ANNUAL OCC	UPY HR.	2868	HR/YR		
	ANNUAL UNO	CC. HR.	5892	HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 1760 = 3616 HR/YR HOUR SAVE (COOLING ONL 3360 - 1100 = 2260 HR/YR

HOAUHC	1429 MBtu -	651.2 MBtu	=	0.00E+00 Btu/CFM-HR
	1440 CFM *	5892 HR/YR		
HOAUH	1429 MBtu -	651.2 MBtu	=	0.00E+00 Btu/CFM-HR
	1440 CFM *	3616 HR/YR		
COAUHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	1440 CFM *	5892 HR/YR		
COAUC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	1440 CFM *	2260 HR/YR		
HOAOHC	1429 MBtu -	777.8 MBtu	=	1.58E+02 Btu/CFM-HR
	1440 CFM *	2868 HR/YR		
HOAOH	1429 MBtu -	777.8 MBtu	=	2.57E+02 Btu/CFM-HR
	1440 CFM *	1760 HR/YR		
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	1440 CFM *	2868 HR/YR		
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	1440 CFM *	1100 HR/YR		
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17
DC DEMAND	1/6 (10 MINUTES PER	HOUR)	=	0.17

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY: BG

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DATE:

10630

BUILDING NO.: BLDG. TYPE:

BN HQ BLDG

ECC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	1440 CFM *	1100 HR/YR		
ECHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	1440 CFM *	2868 HR/YR		
NSUCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	1440 CFM *	5892 HR/YR		
NSUCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	1440 CFM *	3616 HR/YR]	
DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	1440 CFM *	2868 HR/YR	1	
DDCCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	1440 CFM *	1100 HR/YR		
NSC	1429 MBtu -	651.2 MBtu	=	6.25E+04 Btu/ft^2
	12452	AREA	:	
DSC	651.2 MBtu -	590.9 MBtu		4.84E+03 Btu/ft^2
	12452	AREA		
FV	590.9 MBtu -	2582.611 MBtu	=	0.00E+00 Btu/CFM-HR
	1440 CFM *	160 HR/YR		
CHWR	(0.915 kW X 0.012 Eff.)	436 HRS X 2 Degrees	of Reset)	
			=	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

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CHECKED BY:

BC 19-Apr-95

DATE:

10670

BUILDING NO.: BLDG. TYPE:

VEH MNT SHOP

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	5907.6	5504.7	5504.7	5401.8	5401.8	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	129865 CFM
FLOOR AREA	43519 FT ²
CFMI	129865 CFM
UA	BTU/HR • °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

EZDOE RUI	N DEFINITION:
BASERUN	EXISTING OPERATION
RUN1	NIGHT SETBACK
RUN2	ECONOMIZER
RUN3	DDC
RUN4	FORCED VENTILATION
RUN5	

HOURS OF	OCCUPANCY		ANNUAL HEATING & CO	OLING HOURS	
M-F	700	1900	60 HR	HR. ON HEATING	2688 HR/YR
SAT.	700	1900	12 HR	HR. ON COOLING	1680 HR/YR
SUN.	700	1900	12 HR	HR. OFF HEATING	2688 HR/YR
		TOTAL OCCUPY HR.		HR. OFF COOLING	1680 HR/YR
	TOTAL UNOC		84 HR/Wh		
	ANNUAL OCC	UPY HR.	4380 HR/YR		
	ANNUAL UNO	CC. HR.	4380 HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY	8760 HR/YR 5376 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY	3360 HR/YR

HOUR SAVE (HEATING ONL	5376	-	2688	=	2688 HR/YR
HOUR SAVE (COOLING ONL	3360	-	1680	=	1680 HR/YR

HOAUHC	5907.612 MBtu -	5504.704 M	1Btu	=	0.00E+00 Btu/CFM-HR	
	129865 CFM *	4380 H	IR/YR			
HOAUH	5907.612 MBtu -	5504.704 M	1Btu	=	0.00E+00 Btu/CFM-HR	
ļ	129865 CFM *	2688 H	IR/YR			
COAUHC	0 kWH -	0 k\	WH	= '	0.00E+00 kWH/CFM-HR	
	129865 CFM *	4380 H	IR/YR			
COAUC	0 kWH -	0 k\	WH	= -	0.00E+00 kWH/CFM-HR	1
	129865 CFM *	1680 H	IR/YR			
HOAOHC	5907.612 MBtu -	402.9081 M	1Btu	=	9.68E+00 Btu/CFM-HR	
	129865 CFM *	4380 H	R/YR			
НОАОН	5907.612 MBtu -	402.9081 M	/lBtu	=	1.58E+01 Btu/CFM-HR	
	129865 CFM *	2688 H	IR/YR			
COAOHC	0 kWH	0 k\	WH	=	0.00E+00 kWH/CFM-HR	
	129865 CFM *	4380 H	IR/YR			
COAOC	0 kWH	0 k\	WH	=	0.00E+00 kWH/CFM-HR	
	129865 CFM *	1680 H	IR/YR			
DC	1/6 (10 MINUTES PER	R HOUR)		=	0.17	
DC DEMAND	1 / 6 (10 MINUTES PER	R HOUR)		=	0.17	

JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY: CHECKED BY:

DATE:

19-Apr-95 10670

BUILDING NO.: BLDG. TYPE:

VEH MNT SHOP

ECC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	129865 CFM *	1680 HR/YR		5.552 55 K. W. W. S. W. T. K.
ECHC		0 kWH	=	0.00E+00 kWH/CFM-HR
	129865 CFM *	4380 HR/YR	1	
NSUCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	129865 CFM *	4380 HR/YR		
NSUCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	129865 CFM *	2688 HR/YR		
DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	129865 CFM *	4380 HR/YR		
DDCCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	129865 CFM *	1680 HR/YR		
NSC	5907.612 MBtu -	5504.704 MBtu	=	9.26E+03 Btu/ft^2
	43519	AREA		
DSC	5504.704 MBtu -	5401.799 MBtu	_ =	2.36E+03 Btu/ft^2
		AREA		
FV	5401.799 MBtu -		=	0.00E+00 Btu/CFM-HR
	129865 CFM *			
CHWR	(0.915 kW X 0.012 Eff.	X 436 HRS X 2 Degrees	s of Reset)	
			=	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

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BC 19-Apr-95

DATE:

10715A

BUILDING NO.: BLDG. TYPE:

POST SAFETY/LEA

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	2145.3	2145.3	2145.3	2085.2	2085.2	
COOLING (kWH)	1280	1280	1262	350	0	

SUPPLY AIR FAN	17240 CFM
FLOOR AREA	14790 FT ²
CFMI	5720 CFM
UA	BTU/HR • °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

EZDOE RUN DEFINITION:						
BASERUN	EXISTING OPERATION					
RUN1	NIGHT SETBACK					
RUN2	ECONOMIZER					
RUN3	DDC					
RUN4	FORCED VENTILATION					
RUN5						

HOURS OF OCCUPANCY					ANNUAL HEATING & CO	OLING HOURS
M-F	0	2400	120	HR	HR. ON HEATING	4368 HR/YR
SAT.	0	2400	24	HR	HR. ON COOLING	2928 HR/YR
SUN.	0	2400	24	HR	HR. OFF HEATING	0 HR/YR
<u> </u>	TOTAL OCCUI	PY HR.	168	HR/WK	HR. OFF COOLING	0 HR/YR
	TOTAL UNOC		0	HR/WK		
	ANNUAL OCC	UPY HR.	8760	HR/YR		
	ANNUAL UNO	CC HR	0	HR/YR	7	

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING	8760 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY	5376 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY	3360 HR/YR

HOUR SAVE (HEATING ONL	5376	-	4368	=	1008 HR/YR
HOUR SAVE (COOLING ONL	3360	-	2928	=	432 HR/YR

HOAUHC	2145.3 MBtu -	2145.3 MBtu	=	0.00E+00 Btu/CFM-HR	
110/10110	5720 CFM *	0 HR/YR			
HOAUH	2145.3 MBtu -	2145.3 MBtu	=	0.00E+00 Btu/CFM-HR	
	5720 CFM *	1008 HR/YR	7		
COAUHC	1280.443 kWH -	1280.443 kWH	=	0.00E+00 kWH/CFM-HR	
	5720 CFM *	0 HR/YR			
COAUC	1280.443 kWH -	1280.443 kWH	=	0.00E+00 kWH/CFM-HR	
	5720 CFM *	432 HR/YR			
HOAOHC	2145.3 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
	5720 CFM *	8760 HR/YR			
HOAOH	2145.3 MBtu -	0 MBtu	=	0.00E+00 Btu/CFM-HR	
1	5720 CFM *	4368 HR/YR			
COAOHC	1280.443 kWH	0 kWH		0.00E+00 kWH/CFM-HR	
	5720 CFM *	8760 HR/YR			
COAOC	1280.443 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	5720 CFM *	2928 HR/YR			
	1/6 (10 MINUTES PER		=	0.17	
DC DEMAND	1/6 (10 MINUTES PER	R HOUR)	=	0.17	

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JOB: FT. DRUM, NY (EMC #1406-006)

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DATE:

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BUILDING NO.: BLDG. TYPE: 10715A POST SAFETY/LEA

	And the second s			
ECC	1280.443 kWH -	1261.928 kWH	=	3.67E-07 kWH/CFM-HR
	17240 CFM *	2928 HR/YR		
ECHC	1280.443 kWH -	1261.928 kWH	=	1.23E-07 kWH/CFM-HR
	17240 CFM *	8760 HR/YR		
NSUCHC	1280.443 kWH -	1280.443 kWH	=	0.00E+00 kWH/CFM-HR
	17240 CFM *	0 HR/YR		
NSUCC	1280.443 kWH -	1280.443 kWH	=	0.00E+00 kWH/CFM-HR
	17240 CFM *	1008 HR/YR		
DDCCHC	1261.928 kWH -	349.7014 kWH	=	6.04E-06 kWH/CFM-HR
	17240 CFM *	8760 HR/YR		
DDCCC	1261.928 kWH -	349.7014 kWH	=	1.81E-05 kWH/CFM-HR
	17240 CFM *	2928 HR/YR		
NSC	2145.3 MBtu -	2145.3 MBtu	=	0.00E+00 Btu/ft^2
	14790	AREA		
DSC	2145.3 MBtu -	2085.2 MBtu	=	4.06E+03 Btu/ft^2
	14790	AREA		
FV	2085.2 MBtu -	2085.2 MBtu	=	0.00E+00 Btu/CFM-HR
	5720 CFM *	0 HR/YR		
CHWR	(0.915 kW X 0.012 Eff.)	K 436 HRS X 2 Degrees	of Reset)	
			=	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

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DATE:

19-Apr-95

BUILDING NO.: BLDG. TYPE:

10715B POST SAFETY/LEA

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	540.5	280.8	280.8	266.6	215.3	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	9040	CFM
FLOOR AREA	12020	FT ²
CFMI	1000	CFM
UA		BTU/HR • °F
BUILDING CONST	2	(1 FOR LIGHT)
		(2 FOR HEAVY)

EZDOE RUN DEFINITION:					
BASERUN	EXISTING OPERATION				
RUN1	NIGHT SETBACK				
RUN2	ECONOMIZER				
RUN3	DDC				
RUN4	FORCED VENTILATION				
PHN5					

HOURS OF	OCCUPANCY		ANNUAL HEATING & COOLING HOURS		
M-F	600	1700	55 HR	HR. ON HEATING	1430 HR/YR
SAT.	0	0	0 HR	HR. ON COOLING	959 HR/YR
SUN.	0	0	0 HR	HR. OFF HEATING	2938 HR/YR
	TOTAL OCCUPY HR. TOTAL UNOCC. HR.		55 HR/WK	HR. OFF COOLING	1969 HR/YR
			113 HR/WK		
		ANNUAL OCCUPY HR.			
	ANNUAL UNO	CC HR	5892 HR/YR	7	

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING	8760 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY	5376 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY	3360 HR/YR

HOUR SAVE (HEATING ONL	5376	-	1430	=	3946 HR/YR
HOUR SAVE (COOLING ONL	3360	-	959	=	2401 HR/YR

HOAUHC	540.5 MBtu -	280.8 MBtu	=	0.00E+00 Btu/CFM-HR
	1000 CFM *	5892 HR/YR		
HOAUH	540.5 MBtu -	280.8 MBtu	=	0.00E+00 Btu/CFM-HR
	1000 CFM *	3946 HR/YR		
COAUHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	1000 CFM *	5892 HR/YR		
COAUC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	1000 CFM *	2401 HR/YR		
HOAOHC	540.5 MBtu -	259.7 MBtu	=	9.79E+01 Btu/CFM-HR
	1000 CFM *	2868 HR/YR		
HOAOH	540.5 MBtu -	259.7 MBtu	=	1.96E+02 Btu/CFM-HR
	1000 CFM *	1430 HR/YR		
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	1000 CFM *	2868 HR/YR		
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
	1000 CFM *	959 HR/YR		
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17
DC DEMAND	1/6 (10 MINUTES PER	HOUR)	=	0.17

JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

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DATE:

19-Apr-95 10715B

BUILDING NO.: BLDG. TYPE:

POST SAFETY/LEA

ECC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	9040 CFM *	959 HR/YR		
ECHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	9040 CFM *	2868 HR/YR		
NSUCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	9040 CFM *	5892 HR/YR		
NSUCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	9040 CFM *	3946 HR/YR		
DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	9040 CFM *	2868 HR/YR]	
DDCCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	9040 CFM *	959 HR/YR		
NSC	540.5 MBtu -	280.8 MBtu	=	2.16E+04 Btu/ft^2
	12020	AREA		
DSC	280.8 MBtu -	266.6 MBtu	=	1.18E+03 Btu/ft^2
	12020	AREA		
FV	266.6 MBtu -		=	3.21E+02 Btu/CFM-HR
		160 HR/YR		
CHWR	(0.915 kW X 0.012 Eff. X	. 436 HRS X 2 Degrees	of Reset)	
		4	=	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

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BUILDING NO.: BLDG. TYPE:

CLO SALES/RETAIL/FOOD

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	6135.9	3835.6	3835.6	3053.7	2887.5	
COOLING (kWH)	95698	66920	62014	43662	65204	

SUPPLY AIR FAN	59604	CFM
FLOOR AREA	167600	FT ²
CFMI	7994.53	CFM
UA		BTU/HR • °F
BUILDING CONST	2	(1 FOR LIGHT)
		(2 FOR HEAVY)

EZDOE RUI	EZDOE RUN DEFINITION:							
BASERUN	EXISTING OPERATION							
RUN1	NIGHT SETBACK							
RUN2	ECONOMIZER							
RUN3	DDC							
RUN4	FORCED VENTILATION							
RUN5								

HOURS OF				ANNUAL HEATING & COOLING HOURS			
M-F	1000	2000	50	HR	HR. ON HEATING	2240 HR/YR	
SAT.	1000	2000	10	HR	HR. ON COOLING	1400 HR/YR	
SUN.	1000	2000	10	HR	HR. OFF HEATING	3136 HR/YR	
0011.	TOTAL OCCUPY HR.		70 HR/WK	HR/WK	HR. OFF COOLING	1960 HR/YR	
	TOTAL UNOC		98	HR/WK			
	ANNUAL OCC	UPY HR.	3650	HR/YR			
	ANNUAL UNO	CC. HR.	5110	HR/YR			

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY	8760 HR/YR 5376 HR/YR 3360 HR/YR
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HOUR SAVE (HEATING ONL	5376	-	2240	=	3136 HR/YR
HOUR SAVE (COOLING ONL	3360	-	1400	=	1960 HR/YR

6135.91 MBtu -	3835.565 MBtu	=	0.00E+00 Btu/CFM-HR	
7994.53 CFM *	5110 HR/YR			
6135.91 MBtu -	3835.565 MBtu	=	0.00E+00 Btu/CFM-HR	
7994.53 CFM *	3136 HR/YR			
95698.28 kWH -	66920.03 kWH	= -	7.04E-04 kWH/CFM-HR	
7994.53 CFM *	5110 HR/YR			
95698.28 kWH -	66920.03 kWH	= -	1.84E-03 kWH/CFM-HR	
7994.53 CFM *	1960 HR/YR			
6135.91 MBtu -	2300.345 MBtu	<u></u>	1.31E+02 Btu/CFM-HR	
7994.53 CFM *	3650 HR/YR			
6135.91 MBtu -	2300.345 MBtu	=	2.14E+02 Btu/CFM-HR	
7994.53 CFM *	2240 HR/YR			
95698.28 kWH	28778.24 kWH	=	2.29E-03 kWH/CFM-HR	
7994.53 CFM *	3650 HR/YR			
95698.28 kWH	28778.24 kWH	_ =	5.98E-03 kWH/CFM-HR	
7994.53 CFM *	1400 HR/YR			
1/6 (10 MINUTES PE	R HOUR)	=	0.17	
1 / 6 (10 MINUTES PEI	R HOUR)	=	0.17	
	7994.53 CFM * 6135.91 MBtu - 7994.53 CFM * 95698.28 kWH - 7994.53 CFM * 95698.28 kWH - 7994.53 CFM * 6135.91 MBtu - 7994.53 CFM * 6135.91 MBtu - 7994.53 CFM * 95698.28 kWH 7994.53 CFM * 95698.28 kWH 7994.53 CFM *	7994.53 CFM * 5110 HR/YR 6135.91 MBtu - 3835.565 MBtu 7994.53 CFM * 3136 HR/YR 95698.28 kWH - 66920.03 kWH 7994.53 CFM * 5110 HR/YR 95698.28 kWH - 66920.03 kWH 7994.53 CFM * 1960 HR/YR 6135.91 MBtu - 2300.345 MBtu 7994.53 CFM * 3650 HR/YR 6135.91 MBtu - 2300.345 MBtu 7994.53 CFM * 2240 HR/YR 95698.28 kWH 7994.53 CFM * 3650 HR/YR 95698.28 kWH 7994.53 CFM * 3650 HR/YR	7994.53 CFM * 5110 HR/YR 6135.91 MBtu - 3835.565 MBtu = 7994.53 CFM * 3136 HR/YR 95698.28 kWH - 66920.03 kWH = 7994.53 CFM * 5110 HR/YR 95698.28 kWH - 66920.03 kWH = 7994.53 CFM * 1960 HR/YR 6135.91 MBtu - 2300.345 MBtu = 7994.53 CFM * 3650 HR/YR 6135.91 MBtu - 2300.345 MBtu = 7994.53 CFM * 2240 HR/YR 95698.28 kWH 28778.24 kWH = 7994.53 CFM * 3650 HR/YR 95698.28 kWH 28778.24 kWH = 7994.53 CFM * 3650 HR/YR 95698.28 kWH 28778.24 kWH = 7994.53 CFM * 1400 HR/YR	7994.53 CFM * 5110 HR/YR 6135.91 MBtu - 3835.565 MBtu = 0.00E+00 Btu/CFM-HR 7994.53 CFM * 3136 HR/YR 95698.28 kWH - 66920.03 kWH = 7.04E-04 kWH/CFM-HR 7994.53 CFM * 5110 HR/YR 95698.28 kWH - 66920.03 kWH = 1.84E-03 kWH/CFM-HR 7994.53 CFM * 1960 HR/YR 6135.91 MBtu - 2300.345 MBtu = 1.31E+02 Btu/CFM-HR 7994.53 CFM * 3650 HR/YR 6135.91 MBtu - 2300.345 MBtu = 2.14E+02 Btu/CFM-HR 7994.53 CFM * 2240 HR/YR 95698.28 kWH 28778.24 kWH = 2.29E-03 kWH/CFM-HR 7994.53 CFM * 3650 HR/YR 95698.28 kWH 28778.24 kWH = 5.98E-03 kWH/CFM-HR 7994.53 CFM * 1400 HR/YR 95698.28 kWH 28778.24 kWH = 5.98E-03 kWH/CFM-HR 7994.53 CFM * 1400 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

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10730

BUILDING NO.: BLDG. TYPE:

CLO SALES/RETAIL/FOOD

ECC_	66920.03 kWH -	62014.12 kWH	=	5.88E-05 kWH/CFM-HR
	59604 CFM *	1400 HR/YR		
ECHC_	66920.03 kWH -	62014.12 kWH	=	2.26E-05 kWH/CFM-HR
	59604 CFM *	3650 HR/YR		
NSUCHC_	95698.28 kWH -	66920.03 kWH	=	9.45E-05 kWH/CFM-HR
	59604 CFM *	5110 HR/YR		
NSUCC	95698.28 kWH -	66920.03 kWH	=	1.54E-04 kWH/CFM-HR
	59604 CFM *	3136 HR/YR		
DDCCHC	62014.12 kWH -	43661.56 kWH	=	8.44E-05 kWH/CFM-HR
	59604 CFM *	3650 HR/YR		
DDCCC	62014.12 kWH -	43661.56 kWH	=	2.20E-04 kWH/CFM-HR
	59604 CFM *	1400 HR/YR		•
NSC	6135.91 MBtu -	3835.565 MBtu	=	1.37E+04 Btu/ft^2
	167600			
DSC	3835.565 MBtu -	3053.733 MBtu	=	4.66E+03 Btu/ft^2
	167600	AREA		
FV L	3053.733 MBtu -		=	9.28E+01 Btu/CFM-HR
	7994.53 CFM *			
CHWR (0	0.915 kW X 0.012 Eff. X	436 HRS X 2 Degrees	of Reset)	
			=	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

BG

CHECKED BY:

19-Apr-95

DATE: BUILDING NO.:

10745

BLDG. TYPE:

CHILD SUPPORT CENTER

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	3182.7	1861.1	1861.1	1517.1	1636.9	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	10563 CFM
FLOOR AREA	13500 FT ²
CFMI	10563 CFM
UA	BTU/HR • °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

EZDOE RUN DEFINITION:					
BASERUN	EXISTING OPERATION				
RUN1	NIGHT SETBACK				
RUN2	ECONOMIZER				
RUN3	DDC				
RUN4	FORCED VENTILATION				
RUN5					

HOURS OF	OCCUPANCY		ANNUAL HEATING & COOLING HOURS			
M-F	700	1900	60	HR	HR. ON HEATING	1920 HR/YR
SAT.	0	0	0	HR	HR. ON COOLING	1200 HR/YR
SUN.	0	0	0	HR	HR. OFF HEATING	3456 HR/YR
	TOTAL OCCI	JPY HR.	60	HR/WK	HR. OFF COOLING	2160 HR/YR
	TOTAL UNO		108	HR/WK		
	ANNUAL OCC	CUPY HR.	3129	HR/YR		
	ANNUAL UNC	OCC HR	5631	HR/YR		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING	8760 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY	5376 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY	3360 HR/YR

HOUR SAVE (HEATING ONL	5376	-	1920	=	3456 HR/YR
HOUR SAVE (COOLING ONL	3360	_	1200	=	2160 HR/YR

HOAUHC	3182.7 MBtu -	1861.095 MBtu	_ =	0.00E+00 Btu/CFM-HR	
	10563 CFM *	5631 HR/YR			
HOAUH	3182.7 MBtu -	1861.095 MBtu	=	0.00E+00 Btu/CFM-HR	
	10563 CFM *	3456 HR/YR			
COAUHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	10563 CFM *	5631 HR/YR			
COAUC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	1
ļ	10563 CFM *	2160 HR/YR			
HOAOHC	3182.7 MBtu -	1321.605 MBtu	=	5.63E+01 Btu/CFM-HR	
	10563 CFM *	3129 HR/YR			
HOAOH	3182.7 MBtu -	1321.605 MBtu	=	9.18E+01 Btu/CFM-HR	
	10563 CFM *	1920 HR/YR			
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	10563 CFM *	3129 HR/YR			
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	10563 CFM *	1200 HR/YR			
DC	1/6 (10 MINUTES PER	R HOUR)	=	0.17	
DC DEMAND	1/6 (10 MINUTES PER	R HOUR)	=	0.17	

JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CHECKED BY:

вс

DATE:

19-Apr-95 10745

BUILDING NO.: BLDG. TYPE:

CHILD SUPPORT CENTER

ECC	0 k	:WH -	0	kWH	=	0.00E+00	kWH/CFM-HR
	10563 C	CFM *	1200	HR/YR			
ECHC	0 k	:WH -	0	kWH	=	0.00E+00	kWH/CFM-HR
	10563 C	CFM *	3129	HR/YR			
NSUCHC	0 k'	:WH -	0	kWH	=	0.00E+00	kWH/CFM-HR
	10563 C	CFM *	5631	HR/YR			
NSUCC	0 k'	:WH -	0	kWH	=	0.00E+00	kWH/CFM-HR
	10563 C	CFM *	3456	HR/YR			
DDCCHC	0 k'	:WH -	0	kWH	=	0.00E+00	kWH/CFM-HR
	10563 C	CFM *	3129	HR/YR			
DDCCC	0 k	WH -	0	kWH	=	0.00E+00	kWH/CFM-HR
	10563 C	CFM *	1200	HR/YR			
NSC	3182.7 N	/iBtu -	1861.095	MBtu	=	9.79E+04	Btu/ft^2
		1350	00 AREA				
DSC	1861.095 M	/Btu -	1517.129	MBtu	=	2.55E+04	Btu/ft^2
		1350	00 AREA				
FV	1517.129 M	∕lBtu -	1636.91	MBtu	=	0.00E+00	Btu/CFM-HR
	10563 C	FM *	160	HR/YR			
CHWR	(0.915 kW X 0	0.012 Eff	. X 436 HRS X	2 Degrees	of Reset)	- 2-1-1-1	
				.,	=	9.6	kWH/TON
OAR	740 H	IR/YR *	0.01		=	7.4	HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY:

BC 19-Apr-95

DATE:

10785A

BUILDING NO.: BLDG. TYPE:

CHAPEL\CHILD CARE\REL E

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	2051.0	1820.2	1820.2	1417.6	1417.6	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	18800	CFM
FLOOR AREA	40519	FT ²
CFMI	5050	CFM
UA		BTU/HR • °F
BUILDING CONST	2	(1 FOR LIGHT)
		(2 FOR HEAVY)

EZDOE RUN DEFINITION:					
BASERUN	EXISTING OPERATION				
RUN1	NIGHT SETBACK				
RUN2	ECONOMIZER				
RUN3	DDC				
RUN4	FORCED VENTILATION				
RUN5					

HOURS OF OCCUPANCY				ANNUAL HEATING & COOLING HOURS			
M-F	600	1800	60 H	∃R	HR. ON HEATING	1560 HR/YR	
SAT.	0	0	0 F	HR	HR. ON COOLING	1046 HR/YR	
SUN.	0	0	0 H	-IR	HR. OFF HEATING	2808 HR/YR	
	TOTAL OCCUI	TOTAL OCCUPY HR.		HR/WK	HR. OFF COOLING	1882 HR/YR	
	TOTAL UNOC	TOTAL UNOCC. HR. ANNUAL OCCUPY HR.		HR/WK			
	ANNUAL OCC			HR/YR			
ı	ANNUAL UNO	CC. HR.	5631 H	HR/YR			

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 1560 = 3816 HR/YR HOUR SAVE (COOLING ONL 3360 - 1046 = 2314 HR/YR

HOAUHC	2051 MBtu -	1820.2 MBtu] =	0.00E+00 Btu/CFM-HR	
	5050 CFM *	5631 HR/YR			
HOAUH	2051 MBtu -	1820.2 MBtu_	=	0.00E+00 Btu/CFM-HR	
	5050 CFM *	3816 HR/YR			
COAUHC	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR	
	5050 CFM *	5631 HR/YR			
COAUC	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR	
	5050 CFM *	2314 HR/YR			
HOAOHC	2051 MBtu -	230.8 MBtu	=	1.15E+02 Btu/CFM-HR	
	5050 CFM *	3129 HR/YR			
НОАОН	2051 MBtu -	230.8 MBtu	_ =	2.31E+02 Btu/CFM-HR	
	5050 CFM *	1560 HR/YR		<u> </u>	
COAOHC	0 kWH	0 kWH	_ =	0.00E+00 kWH/CFM-HR	
	5050 CFM *	3129 HR/YR			
COAOC	0 kWH	0 kWH	_ =	0.00E+00 kWH/CFM-HR	
	5050 CFM *	1046 HR/YR			
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17	
DC DEMAND	1 / 6 (10 MINUTES PER	HOUR)	=	0.17	

JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CHECKED BY:

BC

DATE:

19-Apr-95 10785A

BUILDING NO.: BLDG, TYPE:

CHAPEL\CHILD CARE\REL E

ECC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
200	18800 CFM *	1046 HR/YR		U.UUE+UU KVVH/CFIVI-HK
ECHC			<u> </u>	0.005.00.1344110534115
EUTU		0 kWH	_ =	0.00E+00 kWH/CFM-HR
	18800 CFM *	3129 HR/YR		
NSUCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	18800 CFM *	5631 HR/YR		
NSUCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	18800 CFM *	3816 HR/YR	1	
DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	18800 CFM *	3129 HR/YR	1	
DDCCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	18800 CFM *	1046 HR/YR		
NSC	2051 MBtu -	1820.2 MBtu	=	5.70E+03 Btu/ft^2
	40519	AREA]	
DSC	1820.2 MBtu -	1417.6 MBtu	=	9.94E+03 Btu/ft^2
	40519	AREA	1	
FV	1417.6 MBtu -	1417.6 MBtu	=	0.00E+00 Btu/CFM-HR
	5050 CFM *	160 HR/YR	1	
CHWR	(0.915 kW X 0.012 Eff. X	436 HRS X 2 Degrees	of Reset)	
			=	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR
			1	

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

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DATE:

19-Apr-95

BUILDING NO.:

10785B

BLDG, TYPE:

CHAPEL\CHILD CARE\REL E

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	876.7	116.3	116.3	95.1	85.7	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	4100	CFM	
FLOOR AREA	3024	FT ²	
CFMI	2000	CFM	
UA		BTU/HR • °F	
BUILDING CONST	2	(1 FOR LIGHT)	
		(2 FOR HEAVY)	

EZDOE RUN DEFINITION:							
BASERUN	EXISTING OPERATION						
RUN1	NIGHT SETBACK						
RUN2	ECONOMIZER						
RUN3	DDC						
RUN4	FORCED VENTILATION						
RUN5							

HOURS OF	OCCUPANCY		ANNUAL HEATING & COOLING HOURS			
M-F	0	0	0 HR	HR. ON HEATING	156 HR/YR	
SAT.	0	0	0 HR	HR. ON COOLING	105 HR/YR	
SUN.	800	1400	6 HR	HR. OFF HEATING	4212 HR/YR	
	TOTAL OCCU	TOTAL OCCUPY HR.		HR. OFF COOLING	2823 HR/YR	
	TOTAL UNOC	C. HR.	162 HR/WK			
	ANNUAL OCC	UPY HR.	313 HR/YR			
	ANNUAL LINO		8447 HR/YR			

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY 5376 H	ID A/D
PRESENT DR. OF OFLINATION FOR OTO, WITH HEAVING ONE	1K/YK
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY 3360 H	łR/YR

HOUR SAVE (HEATING ONL	5376	-	156	=	5220 HR/YR
HOUR SAVE (COOLING ONL	3360	-	105	=	3255 HR/YR

876.7 MBtu -	116.3 MBtu	=	0.00E+00 Btu/CFM-HR
2000 CFM *	8447 HR/YR		
876.7 MBtu -	116.3 MBtu	=	0.00E+00 Btu/CFM-HR
2000 CFM *	5220 HR/YR		
0 kWH -	0 kWH	= .	0.00E+00 kWH/CFM-HR
2000 CFM *	8447 HR/YR		
0 kWH -	0 kWH	= .	0.00E+00 kWH/CFM-HR
2000 CFM *	3255 HR/YR		
876.7 MBtu -	760.4 MBtu	=	1.86E+02 Btu/CFM-HR
2000 CFM *	313 HR/YR		
876.7 MBtu -	760.4 MBtu	=	3.73E+02 Btu/CFM-HR
2000 CFM *	156 HR/YR		
0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
2000 CFM *	313 HR/YR		
0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR
2000 CFM *	105 HR/YR		
1/6 (10 MINUTES PER	HOUR)	=	0.17
1/6 (10 MINUTES PER	HOUR)	=	0.17
	2000 CFM * 876.7 MBtu - 2000 CFM * 0 kWH - 2000 CFM * 0 kWH - 2000 CFM * 876.7 MBtu - 2000 CFM * 876.7 MBtu - 2000 CFM * 0 kWH 2000 CFM * 0 kWH 2000 CFM *	2000 CFM * 8447 HR/YR 876.7 MBtu - 116.3 MBtu 2000 CFM * 5220 HR/YR 0 kWH - 0 kWH 2000 CFM * 8447 HR/YR 0 kWH - 0 kWH 2000 CFM * 3255 HR/YR 876.7 MBtu - 760.4 MBtu 2000 CFM * 313 HR/YR 876.7 MBtu - 760.4 MBtu 2000 CFM * 313 HR/YR 0 kWH 0 kWH 0 kWH	2000 CFM * 8447 HR/YR 876.7 MBtu - 116.3 MBtu = 2000 CFM * 5220 HR/YR 0 kWH - 0 kWH = 2000 CFM * 8447 HR/YR 0 kWH - 0 kWH = 2000 CFM * 3255 HR/YR 876.7 MBtu - 760.4 MBtu = 2000 CFM * 313 HR/YR 876.7 MBtu - 760.4 MBtu = 2000 CFM * 313 HR/YR 876.7 MBtu - 760.4 MBtu = 2000 CFM * 313 HR/YR 0 kWH 0 kWH = 2000 CFM * 313 HR/YR 0 kWH 0 kWH = 2000 CFM * 313 HR/YR 0 kWH 0 kWH = 2000 CFM * 313 HR/YR

JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CHECKED BY:

BC

DATE:

19-Apr-95

BUILDING NO.: BLDG. TYPE:

10785B CHAPEL\CHILD CARE\REL E

ECC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	4100 CFM *	105 HR/YR		
ECHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	4100 CFM *	313 HR/YR		
NSUCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	4100 CFM *	8447 HR/YR		
NSUCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	4100 CFM *	5220 HR/YR		
DDCCHC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	4100 CFM *	313 HR/YR		
DDCCC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR
	4100 CFM *	105 HR/YR		
NSC	876.7 MBtu -	116.3 MBtu	=	2.51E+05 Btu/ft^2
	302	24 AREA		
DSC	116.3 MBtu -	95.1 MBtu	=	7.01E+03 Btu/ft^2
	302	24 AREA		
FV	95.1 MBtu -	85.7 MBtu	=	1.47E+02 Btu/CFM-HR
	2000 CFM *			
CHWR	(0.915 kW X 0.012 Eff	X 436 HRS X 2 Degrees	of Reset)	
			=	9.6 kWH/TON
OAR	740 HR/YR *	0.01	=	7.4 HR/YR

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY:

ВС

DATE:

19-Apr-95

BUILDING NO.: BLDG. TYPE: 10785C CHAPEL\CHILD CARE\REL E

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	679.9	447.6	447.6	358.8	351.3	
COOLING (kWH)	0	0	0	0	0	

SUPPLY AIR FAN	2900 CFM
FLOOR AREA	7048 FT ²
CFMI	900 CFM
UA	BTU/HR • °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

EZDOE RUN DEFINITION:						
BASERUN	EXISTING OPERATION					
RUN1	NIGHT SETBACK					
RUN2	ECONOMIZER					
RUN3	DDC					
RUN4	FORCED VENTILATION					
RUN5						

HOURS OF	OCCUPANCY				ANNUAL HEATING & COOLING HOURS			
M-F	600	1700	55	HR	HR. ON HEATING	1430 HR/YR		
SAT.	0	0	0	HR	HR. ON COOLING	959 HR/YR		
SUN.	0	0	0	HR	HR. OFF HEATING	2938 HR/YR		
0011.	TOTAL OCCUP	PY HR.	55	HR/WK	HR. OFF COOLING	1969 HR/YR		
	TOTAL UNOCO		113	HR/WK				
	ANNUAL OCCU		2868	HR/YR				
	ANNUAL UNO	CC. HR.	5892	HR/YR				

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY
3360 HR/YR

HOUR SAVE (HEATING ONL 5376 - 1430 = 3946 HR/YR HOUR SAVE (COOLING ONL 3360 - 959 = 2401 HR/YR

HOAUHC	679.9 MBtu -	447.6 MBtu	=	4.38E+01 Btu/CFM-HR	
	900 CFM *	5892 HR/YR			
HOAUH	679.9 MBtu -	447.6 MBtu	=	6.54E+01 Btu/CFM-HR	
	900 CFM *	3946 HR/YR			
COAUHC	0 kWH -	0 kWH	_ =	0.00E+00 kWH/CFM-HR	
	900 CFM *	5892 HR/YR			
COAUC	0 kWH -	0 kWH	=	0.00E+00 kWH/CFM-HR	
	900 CFM *	2401 HR/YR			
HOAOHC	679.9 MBtu -	232.3 MBtu	=	1.73E+02 Btu/CFM-HR	
	900 CFM *	2868 HR/YR			
HOAOH	679.9 MBtu -	232.3 MBtu] =	3.48E+02 Btu/CFM-HR	
	900 CFM *	1430 HR/YR			
COAOHC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	900 CFM *	2868 HR/YR			
COAOC	0 kWH	0 kWH	=	0.00E+00 kWH/CFM-HR	
	900 CFM *	959 HR/YR			
DC	1/6 (10 MINUTES PER	HOUR)	=	0.17	
DC DEMAND	1 / 6 (10 MINUTES PER	HOUR)	=	0.17	

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY:

BC

DATE:

19-Apr-95

BUILDING NO.:

10785C

BLDG. TYPE: CHAPEL\CHILD CARE\REL E

0 kWH	- 0	kWH	=	0.00E+00	kWH/CFM-HR
	* 959	HR/YR			
0 kWH	- 0	kWH	=	0.00E+00	kWH/CFM-HR
2900 CFM	* 2868	HR/YR			
0 kWH	- 0	kWH	=	0.00E+00	kWH/CFM-HR
2900 CFM	* 5892	HR/YR			
0 kWH	- 0	kWH	=	0.00E+00	kWH/CFM-HR
2900 CFM	* 3946	HR/YR			
0 kWH	- 0	kWH	=	0.00E+00	kWH/CFM-HR
2900 CFM	* 2868	HR/YR			
0 kWH	- 0	kWH	=	0.00E+00	kWH/CFM-HR
2900 CFM	* 959	HR/YR			
679.9 MBtu	- 447.6	MBtu	=	3.30E+04	Btu/ft^2
	7048 AREA				
447.6 MBtu	- 358.8	MBtu	=	1.26E+04	Btu/ft^2
	7048 AREA				
358.8 MBtu	- 351.27	MBtu	=	5.23E+01	Btu/CFM-HR
900 CFM	* 160	HR/YR			
(0.915 kW X 0.012	Eff. X 436 HRS X	2 Degrees	of Reset)		
			= '	9.6	kWH/TON
740 HR/YF	₹ * 0.01		=	7.4	HR/YR
	2900 CFM	2900 CFM * 959 0 kWH - 0 2900 CFM * 2868 0 kWH - 0 2900 CFM * 5892 0 kWH - 0 2900 CFM * 3946 0 kWH - 0 2900 CFM * 2868 0 kWH - 0 2900 CFM * 2868 0 kWH - 0 2900 CFM * 959 679.9 MBtu - 447.6 7048 AREA 447.6 MBtu - 358.8 7048 AREA 358.8 MBtu - 351.27 900 CFM * 160 (0.915 kW X 0.012 Eff. X 436 HRS X	2900 CFM * 959 HR/YR 0 kWH - 0 kWH 2900 CFM * 2868 HR/YR 0 kWH - 0 kWH 2900 CFM * 5892 HR/YR 0 kWH - 0 kWH 2900 CFM * 3946 HR/YR 0 kWH - 0 kWH 2900 CFM * 2868 HR/YR 0 kWH - 0 kWH 2900 CFM * 2868 HR/YR 0 kWH - 0 kWH 2900 CFM * 959 HR/YR 679.9 MBtu - 447.6 MBtu 7048 AREA 447.6 MBtu - 358.8 MBtu 7048 AREA 358.8 MBtu - 351.27 MBtu 900 CFM * 160 HR/YR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees	2900 CFM * 959 HR/YR 0 kWH - 0 kWH = 2900 CFM * 2868 HR/YR 0 kWH - 0 kWH = 2900 CFM * 5892 HR/YR 0 kWH - 0 kWH = 2900 CFM * 3946 HR/YR 0 kWH - 0 kWH = 2900 CFM * 2868 HR/YR 0 kWH - 0 kWH = 2900 CFM * 2868 HR/YR 0 kWH - 0 kWH = 2900 CFM * 959 HR/YR 679.9 MBtu - 447.6 MBtu = 7048 AREA 447.6 MBtu - 358.8 MBtu = 7048 AREA 358.8 MBtu - 351.27 MBtu = 900 CFM * 160 HR/YR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset)	2900 CFM * 959 HR/YR 0 kWH - 0 kWH = 0.00E+00 2900 CFM * 2868 HR/YR 0 kWH - 0 kWH = 0.00E+00 2900 CFM * 5892 HR/YR 0 kWH - 0 kWH = 0.00E+00 2900 CFM * 3946 HR/YR 0 kWH - 0 kWH = 0.00E+00 2900 CFM * 2868 HR/YR 0 kWH - 0 kWH = 0.00E+00 2900 CFM * 2868 HR/YR 0 kWH - 0 kWH = 0.00E+00 2900 CFM * 959 HR/YR 679.9 MBtu - 447.6 MBtu = 3.30E+04 7048 AREA 447.6 MBtu - 358.8 MBtu = 1.26E+04 7048 AREA 358.8 MBtu - 351.27 MBtu = 5.23E+01 900 CFM * 160 HR/YR (0.915 kW X 0.012 Eff. X 436 HRS X 2 Degrees of Reset) = 9.6

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY: DATE:

BC 19-Apr-95

BUILDING NO.: BLDG. TYPE:

11050A CLINIC W/O BEDS/SUPPLY/IN

ENERGY CONSTANT CALCULATIONS

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	5589.3	2746.9	2746.9	2454.7	2033.3	
COOLING (kWH)	130152	87137	87137	85702	85702	

SUPPLY AIR FAN	52876 CFM	
FLOOR AREA	58017 FT ²	
CFMI	13545 CFM	
UA	BTU/HR • °F	
BUILDING CONST	2 (1 FOR LIGHT)	
	(2 FOR HEAVY)	

EZDOE RUN DEFINITION:							
BASERUN EXISTING OPERATION							
RUN1	NIGHT SETBACK						
RUN2	ECONOMIZER						
RUN3	DDC						
RUN4	FORCED VENTILATION						
RUN5							

HOURS OF	OCCUPANCY				ANNUAL HEATING & COOLING HOURS		
M-F_	700	1900	60	HR	HR. ON HEATING	1560 HR/YR	
SAT.	0	0	0	HR	HR. ON COOLING	1046 HR/YR	
SUN.	0	0	0	HR	HR. OFF HEATING	2808 HR/YR	
	TOTAL OCCUP	PY HR.	60	HR/WK	HR. OFF COOLING	1882 HR/YR	
	TOTAL UNOCC	C. HR.	108	HR/WK			
	ANNUAL OCCU	JPY HR.	3129	HR/YR			
	ANNUAL UNO	CC. HR.	5631	HR/YR	i		

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING 8760 HR/YR PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY 5376 HR/YR PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY 3360 HR/YR

HOUR SAVE (HEATING ONL 5376 1560 3816 HR/YR HOUR SAVE (COOLING ONL 3360 1046 2314 HR/YR

HOAUHC_	5589.282 MBtu -	2746.895	MBtu	=	0.00E+00 Btu/CFM-HR
	13545 CFM *	5631	HR/YR	1	
HOAUH	5589.282 MBtu -	2746.895	MBtu	=	0.00E+00 Btu/CFM-HR
	13545 CFM *	3816	HR/YR]	
	130152 kWH -	87137	kWH	=	5.64E-04 kWH/CFM-HR
	13545 CFM *	5631	HR/YR		
COAUC	130152 kWH -	87137	kWH	=	1.37E-03 kWH/CFM-HR
	13545 CFM *	2314	HR/YR		
-OHOAOHC	5589.282 MBtu -	2842.387	MBtu	=	6.48E+01 Btu/CFM-HR
	13545 CFM *	3129	HR/YR		
HOAOH_	5589.282 MBtu -	2842.387	MBtu	=	1.30E+02 Btu/CFM-HR
	13545 CFM *	1560	HR/YR		
COAOHC_	130152 kWH	43015	kWH	=	2.06E-03 kWH/CFM-HR
	13545 CFM *	3129	HR/YR		
COAOC	130152 kWH	43015	kWH	=	6.15E-03 kWH/CFM-HR
	13545 CFM *	1046	HR/YR		
DC 1	/6 (10 MINUTES PER	R HOUR)		=	0.17
DEMAND 1	/ 6 (10 MINUTES PER	R HOUR)		=	0.17

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY:

вс

DATE:

19-Apr-95 11050A

BUILDING NO.: BLDG. TYPE:

CLINIC W/O BEDS/SUPPLY/IN

ECC	87137 kWH -	87137	kWH	=	0.00E+00 kWH/CFM-HR	
	52876 CFM *	1046	HR/YR			
ECHC	87137 kWH -	87137	kWH	=	0.00E+00 kWH/CFM-HR	
	52876 CFM *		HR/YR_			
NSUCHC	130152 kWH -	87137	kWH	=	1.44E-04 kWH/CFM-HR	
	52876 CFM *	5631	HR/YR			
NSUCC	130152 kWH -	87137	kWH	=	2.13E-04 kWH/CFM-HR	
	52876 CFM *	3816	HR/YR			
DDCCHC	87137 kWH -	85701.7	kWH	=	8.68E-06 kWH/CFM-HR	
2200.70	52876 CFM *	3129	HR/YR			
DDCCC	87137 kWH -	85701.7	kWH	=	2.60E-05 kWH/CFM-HR	kWH/CFM-HR
	52876 CFM *	1046	HR/YR			
NSC	5589.282 MBtu -	2746.895	MBtu	=	4.90E+04 Btu/ft^2	
		AREA				
DSC	2746.895 MBtu -	2454.694	MBtu	=	5.04E+03 Btu/ft^2	
	58017	AREA				
FV	2454.694 MBtu -	2033.336	MBtu	=	1.94E+02 Btu/CFM-HR	
	13545 CFM *		HR/YR			
CHWR (0.915 kW X 0.012 Eff. X	X 436 HRS X	2 Degrees	of Reset)		
,				=	9.6 kWH/TON	
OAR	740 HR/YR *	0.01		=	7.4 HR/YR	

JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW BC

CHECKED BY:

19-Apr-95

DATE: **BUILDING NO.:**

11050B

BLDG. TYPE:

CLINIC W/O BEDS/SUPPLY/IN

	BASERUN	RUN1	RUN2	RUN3	RUN4	RUN5
HEATING (MBtu)	1475.1	1475.1	1475.1	891.7	891.7	
COOLING (kWH)	93145	93145	93145	74890	74890	

SUPPLY AIR FAN	9295 CFM
FLOOR AREA	9278 FT ²
CFMI	2190 CFM
UA	BTU/HR • °F
BUILDING CONST	2 (1 FOR LIGHT)
	(2 FOR HEAVY)

EZDOE RUN DEFINITION:						
BASERUN	EXISTING OPERATION					
RUN1	NIGHT SETBACK					
RUN2	ECONOMIZER					
RUN3	DDC					
RUN4	FORCED VENTILATION					
RUN5						

HOURS OF	OCCUPANCY				ANNUAL HEATING & COOLING HOURS		
M-F	0	2400	120	HR	HR. ON HEATING	4368 HR/YR	
SAT.	0	2400	24	HR	HR. ON COOLING	2928 HR/YR	
SUN.	0	2400	24	HR	HR. OFF HEATING	0 HR/YR	
00111	TOTAL OCCUP	Y HR.	168	HR/WK	HR. OFF COOLING	0 HR/YR	
	TOTAL UNOCO		0	HR/WK			
	ANNUAL OCC	JPY HR.	8760	HR/YR			
	ANNUAL UNO	CC. HR.	0	HR/YR			

PRESENT HR. OF OPERATION FOR SYS. WITH HEATING AND COOLING	8760 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH HEATING ONLY	5376 HR/YR
PRESENT HR. OF OPERATION FOR SYS. WITH COOLING ONLY	3360 HR/YR

HOUR SAVE (HEATING ONL	5376	-	4368	=	1008 HR/YR
HOUR SAVE (COOLING ONL	3360	-	2928	=	432 HR/YR

HOAUHC	1475.1 MBtu -	1475.1 N	MBtu	=	0.00E+00 Btu/CFM-HR
	2190 CFM *	0 H	HR/YR		
HOAUH	1475.1 MBtu -	1475.1 N	MBtu	=	0.00E+00 Btu/CFM-HR
	2190 CFM *	1008 H	HR/YR		
COAUHC	93144.7 kWH -	93144.7 k	kWH	= .	0.00E+00 kWH/CFM-HR
Ī	2190 CFM *	0 1	HR/YR		
COAUC	93144.7 kWH -	93144.7	kWH	= .	0.00E+00 kWH/CFM-HR
	2190 CFM *	432	HR/YR		
HOAOHC	1475.1 MBtu -	0 1	MBtu	=	0.00E+00 Btu/CFM-HR
	2190 CFM *	8760	HR/YR		
HOAOH	1475.1 MBtu -	0 !	MBtu	=	0.00E+00 Btu/CFM-HR
	2190 CFM *	4368 I	HR/YR		
COAOHC	93144.7 kWH	0 1	kWH	=	0.00E+00 kWH/CFM-HR
	2190 CFM *	8760 I	HR/YR		
COAOC	93144.7 kWH	0 I	kWH	=	0.00E+00 kWH/CFM-HR
	2190 CFM *	2928	HR/YR		
DC	1/6 (10 MINUTES PER	HOUR)		=	0.17
	1/6 (10 MINUTES PER			=	0.17

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JOB: FT. DRUM, NY (EMC #1406-006)

CALCULATED BY:

CSW

CHECKED BY:

ВС

DATE:

19-Apr-95 11050B

BUILDING NO.: BLDG. TYPE:

CLINIC W/O BEDS/SUPPLY/IN

ECC	93144.7 kWH -	93144.7 kWH	=	0.00E+00 kWH/CFM-HR	
	9295 CFM *	2928 HR/YR			
ECHC	93144.7 kWH -	93144.7 kWH	=	0.00E+00 kWH/CFM-HR	kWH/CFM-HR
	9295 CFM *	8760 HR/YR			
NSUCHC	93144.7 kWH -	93144.7 kWH	=	0.00E+00 kWH/CFM-HR	
	9295 CFM *	0 HR/YR			
NSUCC	93144.7 kWH -	93144.7 kWH	=	0.00E+00 kWH/CFM-HR	
	9295 CFM *	1008 HR/YR			
DDCCHC	93144.7 kWH -	74890.1 kWH	=	2.24E-04 kWH/CFM-HR	
	9295 CFM *	8760 HR/YR			
DDCCC	93144.7 kWH -	74890.1 kWH	=	6.71E-04 kWH/CFM-HR	kWH/CFM-HR
	9295 CFM *	2928 HR/YR			
NSC	1475.1 MBtu -	1475.1 MBtu	=	0.00E+00 Btu/ft^2	
	9278	AREA			
DSC	1475.1 MBtu -	891.7 MBtu	=	6.29E+04 Btu/ft^2	
	9278	AREA			
FV	891.7 MBtu -	891.7 MBtu	=	0.00E+00 Btu/CFM-HR	
	2190 CFM *	Over the second			
CHWR	(0.915 kW X 0.012 Eff. X	436 HRS X 2 Degrees	of Reset)		
		1000 A 100 100 A 100 100 A	=	9.6 kWH/TON	
OAR	740 HR/YR *	0.01	=	7.4 HR/YR	

APPENDIX G.2 ENERGY SAVINGS CALCULATIONS

ENERGY CALCULATIONS

BUILDING 30

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

30

06-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

12,578

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

Typical Ballang Information							
Category		Construction	Use	Occ.	Day		
<u> </u>	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		7.5
Load Factor		0.8
CFM - HTG		8000
CFM - CLG		0
% OA		100.00%
% Area		17.60%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE	,,,,	
EFFHP	83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

30

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,789.6	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	174.4	
Sub Total	0.0	12,801.7	174.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	63.0	-
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,801.7	237.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

30

EMC NO.: 1406-006 DATE:

DATE: 06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

12,578

System Type

2

System Name:

H&V UNIT

System Number:

AHU2

Typical Building Information

	. , , ,				
Category	Construction	Use	Occ.	Day	
16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT	

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	8
Load Factor	0.8
CFM - HTG	5265
CFM - CLG	0
% OA	25.00%
% Area	17.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP	83.10% 83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

30

System Type

2

System Name:

H&V UNIT

System Number:

AHU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	14,042.8	0.0	
Optimum ST/SP	0.0	1,079.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	200.8	
Sub Total	0.0	15,122.3	200.8	77.77.
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	72.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	The second secon
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	15,122.3	273.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

30

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

06-Apr-95

Building Sq.Ft.: System Type

2

H&V UNIT

System Name: System Number:

AHU3

	Typical Building Information						
Category		Construction	Use	Occ.	Day		
	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT		

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400
Ctop Time			L				

INPUTS	INPUT
Motor HP	10
Load Factor	0.8
CFM - HTG	4670
CFM - CLG	0
% OA	100.00%
% Area	15.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 85.8	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

30

System Type

2

System Name:

H&V UNIT

System Number:

AHU3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	17,001.1	0.0	-
Optimum ST/SP	0.0	1,307.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	*****
Night Setback	0.0	0.0	177.2	
Sub Total	0.0	18,308.0	177.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	64.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		· · ·		
Run Time, and Safety Alarms				3
TOTAL	0.0	18,308.0	241.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

30

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

12,578

System Type

System Name:

H&V UNIT

System Number:

AHU4

Typical Building Information

	Typical Banang Internation								
Category Construction		Use	Occ.	Day					
	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT				

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		7430
CFM - CLG		0
% OA		5.00%
% Area		24.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

30

System Type

2

System Name:

H&V UNIT

System Number:

AHU4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	25,236.9	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	A CONTRACTOR OF THE CONTRACTOR
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	283.5	
Sub Total	0.0	27,177.0	283.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	, <u>, , , , , , , , , , , , , , , , , , </u>
DDC Control	0.0	0.0	102.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms	•			3
TOTAL	0.0	27,177.0	385.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

30

EMC NO.: 1406-006

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

12,578

System Type

System Name:

H&V UNIT AHU5

System Number:

Typical Building Information

Typical Building Information							
Category	Construction	Use	Occ.	Day			
1	6 BRICK	ENK PERS DINNING	0400-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	6
Load Factor	0.8
CFM - HTG	3145
CFM - CLG	0
% OA	5.00%
% Area	10.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 81.60%	81.60%

HOURS CALCULATIONS	REQUIRED PRESE		
Cooling HRSON	2,422	3,360	
Heating HRSON	3,875	5,376	
C/H HRSON	6,314	8,760	
Cooling HRSAV	938		
Heating HRSAV	1,501		
C/H HRSAV	2,445		

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

30

System Type

2

System Name:

H&V UNIT

System Number:

AHU5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	10,725.7	0.0	
Optimum ST/SP	0.0	824.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	118.1	
Sub Total	0.0	11,550.2	118.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	42.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	11,550.2	160.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

30

06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

Typical Building Information

		rypicar 2	anding information		
1	Category	Construction	Use	Occ.	Day
	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	4
Load Factor	0.8
CFM - HTG	600
CFM - CLG	0
% OA	0.00%
% Area	1.60%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

30

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,614.1	0.0	
Optimum ST/SP	0.0	567.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	18.9	
Sub Total	0.0	7,181.9	18.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	V-1
DDC Control	0.0	0.0	6.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	7,181.9	25.7	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

30

DATE:

EMC NO.: 1406-006

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

12,578

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

Typical Building Information

	Typical Bullaring Information							
Category		Construction	Use	Occ.	Day			
	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT			

Enter Weeks of Summer:

32

Required Operation	S	М	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		7.40%
TON CAPC.		0
MBTU CAPC.		1.5064
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HŘSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

30

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	3,349.5	0.0	
Optimum ST/SP	0.0	287.5	0.0	<u> </u>
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	87.4	
Sub Total	0.0	3,637.0	87.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	31.6	
HW OA Reset	0.0	0.0	11.1	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	3,637.0	130.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

30

DATE:

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

10,868

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

Typical Building Information

Typical Ballating Internation							
Category Construction Use		Occ.	Day				
	15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT		

Enter Weeks of Summer:

32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		100.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	Annual Control of the second control of
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0]

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	0.00E+00
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

30

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	0.0	0.0	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

30

DATE:

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

10,868

Building Sq.Ft.: System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1A

Typical Building Information

I	Category	Construction	Use	Occ.	Day
	15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT

Enter Weeks of Summer:

20 32

.11101 44	cons or		 ļ.	

Required Operation	S	M	1	VV	III	Г	3
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		1.5064
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

30

System Type

9 CONVERTER AND PUMPS

System Name: System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	11.1	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		•		
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	11.1	3

ENERGY CALCULATIONS

BUILDING 36

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

36

TH

BLDG:

EMC NO.: 1406-006

20-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

26,440 3

SINGLE ZONE AHU WITHOUT RETURN FAN

System Name: System Number:

AC1M

Typical Building Information

	. , , , , , , , , , ,			,
Category	Construction	Use	Occ.	Day
1	BRICK	MEDICAL CENTER	0700-1600	MON-FRI

Enter Weeks of Summer:

Required Operation

20

Enter weeks of winter:	32

S

Start Time	0	700	700	700	700	700	0
Stop Time	0	1600	1600	1600	1600	1600	0
Stop Time		1000	1000	1000		1000	1

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		760
CFM - CLG		760
% OA		33.55%
% Area		8.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton	•	0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,100	3,360
Heating HRSON	1,760	5,376
C/H HRSON	2,868	8,760
Cooling HRSAV	2,260	
Heating HRSAV	3,616	
C/H HRSAV	5,892	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	4.25E-04	4.25E-04
COAUHC	1.63E-04	1.63E-04
НОАОН	150.00	150.00
HOAOHC	92.20	92.20
COAOC	4.87E-03	4.87E-03
COAOHC	1.87E-03	1.87E-03
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	7.93E-05	7.93E-05
NSUCHO	4.86E-05	4.86E-05
DDCCHC		2.04E-04
DDCCC	5.31E-04	5.31E-04
DSC	4.85E+03	4.85E+03
NSC	6.10E+04	6.10E+04
FV	0	0
CHWR	9.57	9.57
OAF	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

20-Apr-95 PAGE 2 OF 2

Bldg Number:

36

System Type System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AC1M

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	9,256.6	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	3.1	0.0	0.0	•
Night Setback	0.0	0.0	133.9	
Sub Total	3.1	9,544.1	133.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	7.8	0.0	
DDC Control	0.0	1,157.4	10.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	3.1	10,709.3	144.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY** BLDG:

LOCATION: FT. DRUM

36

20-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

26,440

System Type

6

System Name:

MULTI-ZONE AHU

System Number:

AC2M

Typical Building Information

	. , p.ou	anang morana		
Category	Construction	Use	Occ.	Day
	BRICK	MEDICAL CENTER	0700-1600	MON-FRI

Enter Weeks of Summer:

20 32

Required Operation	S	М	Ŧ	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1600	1600	1600	1600	1600	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	5
Load Factor	0.8
CFM - HTG	4255
CFM - CLG	4255
% OA	33.61%
% Area	8.30%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,100	3,360
Heating HRSON	1,760	5,376
C/H HRSON	2,868	8,760
Cooling HRSAV	2,260	
Heating HRSAV	3,616	
C/H HRSAV	5,892	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	4.25E-04	4.25E-04
COAUHC	1.63E-04	1.63E-04
HOAOH	150.00	150.00
HOAOHC	92.20	92.20
COAOC	4.87E-03	4.87E-03
COAOHC	1.87E-03	1.87E-03
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	7.93E-05	7.93E-05
NSUCHC	4.86E-05	4.86E-05
DDCCHC	2.04E-04	2.04E-04
DDCCC	5.31E-04	5.31E-04
DSC	4.85E+03	4.85E+03
NSC	6.10E+04	6.10E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

20-Apr-95 PAGE 2 OF 2

Bldg Number:

36

System Type

System Name:

MULTI-ZONE AHU

6

System Number:

AC2M

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	22,908.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	7.3	0.0	0.0	
Night Setback	0.0	0.0	133.9	
Sub Total	7.3	23,595.7	133.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	43.8	0.0	
DDC Control	0.0	6,479.7	10.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms			Ì	6
TOTAL	7.3	30,119.2	144.5	6

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

36

DATE:

20-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

26,440

System Type

System Name:

MULTI-ZONE AHU

System Number:

AC3M

Typical Building Information

, y p. 10 a 1 a.								
Category	Construction	Use	Occ.	Day				
	BRICK	MEDICAL CENTER	0700-1600	MON-FRI				

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1600	1600	1600	1600	1600	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	10	
Load Factor		0.8
CFM - HTG		4630
CFM - CLG		4630
% OA		33.61%
% Area		8.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,100	3,360
Heating HRSON	1,760	5,376
C/H HRSON	2,868	8,760
Cooling HRSAV	2,260	
Heating HRSAV	3,616	
C/H HRSAV	5,892	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	4.25E-04	4.25E-04
COAUHC	1.63E-04	1.63E-04
HOAOH	150.00	150.00
HOAOHC	92.20	92.20
COAOC	4.87E-03	4.87E-03
COAOHC	1.87E-03	1.87E-03
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	7.93E-05	7.93E-05
NSUCHC	4.86E-05	4.86E-05
DDCCHC	2.04E-04	2.04E-04
DDCCC	5.31E-04	5.31E-04
DSC	4.85E+03	4.85E+03
NSC	6.10E+04	6.10E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

20-Apr-95 PAGE 2 OF 2

Bldg Number:

36

System Type

System Name:

6 **MULTI-ZONE AHU**

System Number:

AC3M

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	42,456.5	0.0	
Optimum ST/SP	0.0	1,307.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	13.9	0.0	0.0	
Night Setback	0.0	0.0	133.9	
Sub Total	13.9	43,763.5	133.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	47.7	0.0	
DDC Control	0.0	7,050.7	10.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				6
TOTAL	13.9	50,861.9	144.5	6

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

36

20-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

26,440

System Type

6

System Name:

MULTI-ZONE AHU

System Number:

AC4M

Typical Building Information

Typical Ballating thromation								
Category	Construction	Use	Occ.	Day				
	1 BRICK	MEDICAL CENTER	0700-1600	MON-FRI				

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1600	1600	1600	1600	1600	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS			INPUT			
Mot	Motor HP					
Load	Factor		0.8			
CFM -	- HTG		7490			
CFM ·	- CLG		7490			
	% OA		33.61%			
%	Area		8.30%			
TON C	APC.		0			
MBTU (CAPC.		0			
k'	W/Ton		0			
M	OSON		12			
	EFF		1			
LOOK-UP VALU	E					
	FFHP	85.80%	85.80%			

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,100	3,360
Heating HRSON	1,760	5,376
C/H HRSON	2,868	8,760
Cooling HRSAV	2,260	
Heating HRSAV	3,616	
C/H HRSAV	5,892	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	4.25E-04	4.25E-04
COAUHC	1.63E-04	1.63E-04
НОАОН	150.00	150.00
HOAOHC	92.20	92.20
COAOC	4.87E-03	4.87E-03
COAOHC	1.87E-03	1.87E-03
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	7.93E-05	7.93E-05
NSUCHC	4.86E-05	4.86E-05
DDCCHC	2.04E-04	2.04E-04
DDCCC	5.31E-04	5.31E-04
DSC	4.85E+03	4.85E+03
NSC	6.10E+04	6.10E+04
FV	.0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

20-Apr-95 PAGE 2 OF 2

Bldg Number:

36

System Type

System Name:

6 **MULTI-ZONE AHU**

System Number:

AC4M

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	43,379.6	0.0	
Optimum ST/SP	0.0	1,307.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	13.9	0.0	0.0	*
Night Setback	0.0	0.0	133.9	
Sub Total	13.9	44,686.6	133.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	77.1	0.0	
DDC Control	0.0	11,406.0	10.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				6
TOTAL	13.9	56,169.8	144.5	6

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

36

DATE:

20-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

26,440

System Type

System Name:

CHILLER AND PUMPS

System Number:

ACC1M

Typical Building Information

Typical banding information								
Category		Construction	Use	Occ.	Day			
	1	BRICK	MEDICAL CENTER	0700-1600	MON-FRI			

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1600	1600	1600	1600	1600	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	. April	Dr. De Rijter Dan	INPUT				
Motor	Motor HP						
Load Fac	ctor		0.8				
CFM - H	TG		0				
CFM - C	CFM - CLG						
% (% OA						
% Aı	0.00%						
TON CAF	C.		20.8				
MBTU CA	PC.		0				
kW/	Ton		0				
MOS	ON		5				
E	1						
LOOK-UP VALUE							
EFF	HP	69.20%	69.20%				

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,100	3,360
Heating HRSON	1,760	5,376
C/H HRSON	2,868	8,760
Cooling HRSAV	2,260	
Heating HRSAV	3,616	
C/H HRSAV	5,892	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	4.25E-04	4.25E-04
COAUHC	1.63E-04	1.63E-04
HOAOH	150.00	150.00
НОАОНС	92.20	92.20
COAOC	4.87E-03	4.87E-03
COAOHC	1.87E-03	1.87E-03
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	7.93E-05	7.93E-05
NSUCHC	4.86E-05	4.86E-05
DDCCHC	2.04E-04	2.04E-04
DDCCC	5.31E-04	5.31E-04
DSC	4.85E+03	4.85E+03
NSC	6.10E+04	6.10E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

20-Apr-95 PAGE 2 OF 2

Bldg Number:

36

System Type

8

System Name:

CHILLER AND PUMPS

System Number:

ACC1M

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,922.1	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	2.6	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	2.6	3,165.1	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	199.1	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	2.6	3,364.2	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

36

EMC NO.: 1406-006 DATE:

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

20-Apr-95

PAGE 1 OF 2

Building Sq.Ft.:

26,440

System Type

System Name:

CHILLER AND PUMPS

System Number:

ACC2M

Typical Building Information

Typical Dallating Information								
Category Construction		Use	Occ.	Day				
	1	BRICK	MEDICAL CENTER	0700-1600	MON-FRI			

Enter Weeks of Summer:

32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1600	1600	1600	1600	1600	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	. nj. sa (1. s. j.)	INPUT
Motor HP		1.5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		20.8
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	a de la de la compania del compania del compania de la compania del compania de la compania del compania de la compania de la compania de la compania de la compania del compania del compania del compania del compania del la compania del
Cooling HRSON	1,100	3,360
Heating HRSON	1,760	5,376
C/H HRSON	2,868	8,760
Cooling HRSAV	2,260	
Heating HRSAV	3,616	
C/H HRSAV	5,892	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	4.25E-04	4.25E-04
COAUHC	1.63E-04	1.63E-04
HOAOH	150.00	150.00
HOAOHC	92.20	92.20
COAOC	4.87E-03	4.87E-03
COAOHC	1.87E-03	1.87E-03
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	7.93E-05	7.93E-05
NSUCHC	4.86E-05	4.86E-05
DDCCHC	2.04E-04	2.04E-04
DDCCC	5.31E-04	5.31E-04
DSC	4.85E+03	4.85E+03
NSC	6.10E+04	6.10E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

20-Apr-95 PAGE 2 OF 2

Bidg Number:

36

System Type

8

System Name:

CHILLER AND PUMPS

System Number:

ACC2M

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,922.1	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	2.6	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	2.6	3,165.1	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	199.1	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	2.6	3,364.2	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

36

DATE:

20-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

26,440

System Type

System Name:

MULTI-ZONE AHU

System Number:

AHU1A

Typical Building Information

	Typical Dallang Information							
Category		Construction	Use	Occ.	Day			
	1	BRICK	MEDICAL CENTER	0700-1600	MON-FRI			

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1600	1600	1600	1600	1600	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	7.5
Load Factor	0.8
CFM - HTG	6950
CFM - CLG	6950
% OA	23.02%
% Area	15.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 8	33.10% 83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,100	3,360
Heating HRSON	1,760	5,376
C/H HRSON	2,868	8,760
Cooling HRSAV	2,260	
Heating HRSAV	3,616	
C/H HRSAV	5,892	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	4.25E-04	4.25E-04
COAUHC	1.63E-04	1.63E-04
HOAOH	150.00	150.00
HOAOHC	92.20	92.20
COAOC	4.87E-03	4.87E-03
COAOHC	1.87E-03	1.87E-03
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	7.93E-05	7.93E-05
NSUCHO	4.86E-05	4.86E-05
DDCCHC	2.04E-04	2.04E-04
DDCCC	5.31E-04	5.31E-04
DSC	4.85E+03	4.85E+03
NSC	6.10E+04	6.10E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

20-Apr-95 PAGE 2 OF 2

Bldg Number:

36

System Type

6

System Name:

MULTI-ZONE AHU

System Number:

AHU1A

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	33,256.4	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	10.8	0.0	0.0	
Night Setback	0.0	0.0	241.9	
Sub Total	10.8	34,268.5	241.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	49.0	0.0	
DDC Control	0.0	10,583.7	19.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		and the second s		
Run Time, and Safety Alarms				6
TOTAL	10,8	44,901.2	261.2	6

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

36

EMC NO.: 1406-006

DATE: 20-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

26,440

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B1

Typical Building Information

Typicar Bullating Information								
Category	Construction	Use	Occ.	Day				
	1 BRICK	MEDICAL CENTER	0700-1600	MON-FRI				

Enter Weeks of Summer:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1600	1600	1600	1600	1600	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.333333
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		25.00%
TON CAPC.	-	0
MBTU CAPC.		2.008
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,100	3,360
Heating HRSON	1,760	5,376
C/H HRSON	2,868	8,760
Cooling HRSAV	2,260	
Heating HRSAV	3,616	
C/H HRSAV	5,892	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	4.25E-04	4.25E-04
COAUHC	1.63E-04	1.63E-04
HOAOH	150.00	150.00
HOAOHC	92.20	92.20
COAOC	4.87E-03	4.87E-03
COAOHC	1.87E-03	1.87E-03
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	7.93E-05	7.93E-05
NSUCHC	4.86E-05	4.86E-05
DDCCHC	2.04E-04	2.04E-04
DDCCC	5.31E-04	5.31E-04
DSC	4.85E+03	4.85E+03
NSC	6.10E+04	6.10E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

20-Apr-95 PAGE 2 OF 2

Bldg Number:

36

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

R1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,106.1	0.0	
Optimum ST/SP	0.0	57.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	403.2	
Sub Total	0.0	1,163.6	403.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	32.1	
HW OA Reset	0.0	0.0	14.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,163.6	450.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

36

20-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

26,440

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

Typical Building Information

Typical Ballating Information								
Category	Construction	Use	Occ.	Day				
	BRICK	MEDICAL CENTER	0700-1600	MON-FRI				

Enter Weeks of Summer:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1600	1600	1600	1600	1600	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.333333
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		25.00%
TON CAPC.		0
MBTU CAPC.		2.008
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,100	3,360
Heating HRSON	1,760	5,376
C/H HRSON	2,868	8,760
Cooling HRSAV	2,260	
Heating HRSAV	3,616	
C/H HRSAV	5,892	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	4.25E-04	4.25E-04
COAUHC	1.63E-04	1.63E-04
НОАОН	150.00	150.00
HOAOHC	92.20	92.20
COAOC	4.87E-03	4.87E-03
COAOHC	1.87E-03	1.87E-03
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	7.93E-05	7.93E-05
NSUCHO	4.86E-05	4.86E-05
DDCCHC	2.04E-04	2.04E-04
DDCCC	5.31E-04	5.31E-04
DSC	4.85E+03	4.85E+03
NSC	6.10E+04	6.10E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

20-Apr-95 PAGE 2 OF 2

Bldg Number:

36

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number: B2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,106.1	0.0	
Optimum ST/SP	0.0	57.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	403.2	
Sub Total	0.0	1,163.6	403.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	32.1	
HW OA Reset	0.0	0.0	14.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		· · · · · · · · · · · · · · · · · · ·		
Run Time, and Safety Alarms				3
TOTAL	0.0	1,163.6	450.1	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

36

20-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

26,440

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: HV1

Typical Building Information

Typical Dancing Information								
Category	Construction	Use	Occ.	Day				
1	BRICK	MEDICAL CENTER	0700-1600	MON-FRI				

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1600	1600	1600	1600	1600	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	1
Load Factor	0.8
CFM - HTG	600
CFM - CLG	0
% OA	100.00%
% Area	5.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	hand on a manager of the
Cooling HRSON	1,100	3,360
Heating HRSON	1,760	5,376
C/H HRSON	2,868	8,760
Cooling HRSAV	2,260	
Heating HRSAV	3,616	
C/H HRSAV	5,892	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	4.25E-04	4.25E-04
COAUHC	1.63E-04	1.63E-04
HOAOH	150.00	150.00
HOAOHC	92.20	92.20
COAOC	4.87E-03	4.87E-03
COAOHC	1.87E-03	1.87E-03
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		7.93E-05
NSUCHO	4.86E-05	4.86E-05
DDCCHC	2.04E-04	2.04E-04
DDCCC	5.31E-04	5.31E-04
DSC	4.85E+03	4.85E+03
NSC	6.10E+04	6.10E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

20-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,078.8	0.0	<u>.</u>
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	80.6	
Sub Total	0.0	5,240.9	80.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	6.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,240.9	87.1	3.0

ENERGY CALCULATIONS

BUILDING 119

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

119

EMC NO.: 1406-006

DATE: 05-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

14,954

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

	. 7			1
Category	Construction	Use	Occ.	Day
1	7 BRICK	BN HQ BLDG	0600-1700	SUN-SAT

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	\$	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		1230
CFM - CLG		0
% OA		100.00%
% Area		21.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	***	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

119

System Type

...

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	8,214.2	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	196.2	
Sub Total	0.0	8,501.7	196.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	15.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL TOTAL	0.0	8,501.7	211.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

119

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

05-Apr-95

PAGE 1 OF 2

DATE:

Building Sq.Ft.:

14,954

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-2

Typical Building Information

Category Construction		Use	Occ.	Day	
17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT	

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	1
Load Factor	0.8
CFM - HTG	210
CFM - CLG	0
% OA	100.00%
% Area	4.00%
TON CAPC.	0
MBTU CAPC	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP	69.20% 69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

119

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,629.4	0.0	
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	37.4	
Sub Total	0.0	4,791.4	37.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	2.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,791.4	40.3	3.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

119

04-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

14,954

System Type System Name:

CONVERTER AND PUMPS

System Number:

HE1

Typical Building Information								
Category		Construction	Use	Occ.	Day			
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.2602
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HŘSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

119

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,041.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,328.6	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	1.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,328.6	1.9	4.5 (3.15)

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

119

DATE: 04-Apr-95 PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

14,954

System Type

12

HE2

System Name:

BASEBOARD RADIATION

System Number:

Typical Building Information

Typical ballang information							-
	Category	С	onstruction	Use	Occ.	Day	
		17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT	

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	The state of the s	INPUT
Motor HP		0.75
Load Factor	0.8	
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area	75.00%	
TON CAPC.		0
MBTU CAPC.		0.1117
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HŘSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

119

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,268.5	0.0	······
Optimum ST/SP	0.0	129.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	700.6	
Sub Total	0.0	2,397.8	700.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	54.3	
HW OA Reset	0.0	0.0	0.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,397.8	755.7	3

ENERGY CALCULATIONS

BUILDING 173

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

173

EMC NO.: 1406-006

DATE: 06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

65,700

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

Typical Building Information

	. / p.ou							
	Category	Construction Use		Occ.	Day			
ĺ	15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT			

Enter Weeks of Summer:

32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	3
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	100.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP	79.00% 79.00%

 To a series of the part of the series of the	REQUIRED	
CALCULATIONS	HR/YR	HKYK
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	·
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	0.00E+00
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number: System Type

173

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG: 173 DATE:

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

65,700

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

Typical Building Information

Typical Ballang Internation							
Category	Construction	Use	Occ.	Day			
15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT				
Motor HP	0					
Load Factor	Load Factor					
CFM - HTG		0				
CFM - CLG		0				
% OA		0.00%				
% Area		0.00%				
TON CAPC.		0				
MBTU CAPC.		5.976				
kW/Ton		0				
MOSON		7				
EFF		1				
LOOK-UP VALUE						
EFFHP	0.00%	0.00%				

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

173

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B3

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	44.2	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms	3			
TOTAL	0.0	0.0	44.2	3

ENERGY CALCULATIONS

BUILDING 174

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

174

DATE:

06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

26,161

Building Sq.Ft.: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

Typical Dallating tillottination								
Category	Construction	Use	Occ.	Day				
1	7 BRICK	BN HQ BLDG	0600-1700	SUN-SAT	l			

Enter Weeks of Summer:

32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	1230
CFM - CLG	0
% OA	100.00%
% Area	21.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 78.00%	6 78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	8,214.2	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	343.2	
Sub Total	0.0	8,501.7	343.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	26.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	8,501.7	369.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

174

DATE:

06-Apr-95 PREPARED BY: CSW/BMG

PAGE 1 OF 2

EMC NO.: 1406-006

CHECKED BY: KC/WLC

26,161

Building Sq.Ft.:

System Type

AHU2

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

Typical Building Information							
Category		Construction	Use	Occ.	Day		
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT		

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	4.	S	М	T	W	TH	F	S
Start Time		0	0	0	0	0	0	0
Stop Time		2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1
Load Factor		0.8
CFM - HTG		210
CFM - CLG		0
% OA		100.00%
% Area		4.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

174

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,629.4	0.0	
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0)
Night Setback	0.0	0.0	65.4	
Sub Total	0.0	4,791.4	65.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	5.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,791.4	70.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

174

DATE:

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

26,161

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

Typical Building Information

1) producting								
Category	Construction Use		Occ.	Day				
17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT				

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		20.00%
TON CAPC.		0
MBTU CAPC.		0.2602
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	to a contract of the second of the first
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,041.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	326.8	
Sub Total	0.0	5,328.6	326.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	25.3	
HW OA Reset	0.0	0.0	1.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,328.6	354.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

174

EMC NO.: 1406-006

DATE: 06-Арг-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

26,161

Building Sq.Ft.: System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE2

Typical Building Information

Typical Building Information								
Category	Category Construction			Occ.	Day			
<u> </u>	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		75.00%
TON CAPC.		0
MBTU CAPC.		0.1117
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

174

System Type

BASEBOARD RADIATION

System Name: System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,268.5	0.0	
Optimum ST/SP	0.0	129.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	1,225.6	**************************************
Sub Total	0.0	2,397.8	1,225.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	95.0	
HW OA Reset	0.0	0.0	0.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,397.8	1,321.4	3

ENERGY CALCULATIONS

BUILDING 175

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

175

DATE:

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

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Building Sq.Ft.:

65,700

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

Typical Building Information

Typical Dallaring information							
Category		Construction	Use	Occ.	Day		
	15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Required Operation	S	М	Τ	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		100.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HUAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	0.00E+00
NSC	0.00E+00	0.00E+00
FV	. 0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 175

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

12

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

175

EMC NO.: 1406-006

06-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

19,439

System Type

AHU1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

Typical Building Information

Typical Ballang intermediation								
Category	Construction	Use	Occ.	Day				
	6 BRICK	ENK PERS DINNING	0400-2400	SUN-SAT				

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	400	400	400	.400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		7.5
Load Factor		0.8
CFM - HTG		8000
CFM - CLG		0
% OA		100.00%
% Area		17.60%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	83.10%	83.10%

HOURS	REQUIRED	PRESENT	
CALCULATIONS	HR/YR	HR/YR	
Cooling HRSON	2,520	3,360	
Heating HRSON	4,032	5,376	
C/H HRSON	6,570	8,760	
Cooling HRSAV	840		
Heating HRSAV	1,344		
C/H HRSAV	2,190		

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39€+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

175

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,789.6	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	174.4	
Sub Total	0.0	12,801.7	174.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	63.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,801.7	237.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

175

DATE: 06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

19,439

System Type

System Name:

H&V UNIT AHU2

System Number:

Typical Building Information

Typical Dulluling Information								
Category		Construction	Use	Occ.	Day			
	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT			

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	8
Load Factor	0.8
CFM - HTG	5265
CFM - CLG	0
% OA	25.00%
% Area	17.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP	83.10% 83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

175

System Type

2

System Name: System Number: **H&V UNIT** AHU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	14,042.8	0.0	•
Optimum ST/SP	0.0	1,079.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	310.3	
Sub Total	0.0	15,122.3	310.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	112.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	15,122.3	422.5	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

175

EMC NO.: 1406-006

06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

19,439

System Type

H&V UNIT

System Name: System Number:

AHU3

Typical Building Information

Typical Dallaing Information								
Category	Construction	struction Use		Day				
1	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT				

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	Т	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		10
Load Factor		0.8
CFM - HTG		4670
CFM - CLG		0
% OA		100.00%
% Area		15.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	39.67	39.67
НОАОНС	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

175

System Type

2

System Name:

H&V UNIT

-,		
System	Number:	AHU3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	17,001.1	0.0	
Optimum ST/SP	0.0	1,307.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	273.8	
Sub Total	0.0	18,308.0	273.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	98.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	18,308.0	372.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

175

EMC NO.: 1406-006

DATE: 06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

19,439

System Type

System Name:

H&V UNIT AHU4

System Number:

Typical Building Information

Typical Ballating Information								
Category	Construction	Use Occ		Day				
10	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT				

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	7430
CFM - CLG	0
% OA	5.00%
% Area	24.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	 Company of the control /li>
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HŘSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

175

System Type

2

System Name:

H&V UNIT

System	name:	пол п
System	Number:	AHU4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	25,236.9	0.0	-
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	438.1	
Sub Total	0.0	27,177.0	438.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	158.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms			j	3
TOTAL	0.0	27,177.0	596.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

175

Building Sq.Ft.:

19,439

System Type

H&V UNIT

System Name: System Number:

AHU5

Typical Building Information

Typical Building Information							
Category	С	onstruction	Use	Occ.	Day		
	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT		

Enter Weeks of Summer:

20

En

nter Weeks of Winter:	÷	32

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

BLDG:

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	6
Load Factor	0.8
CFM - HTG	3145
CFM - CLG	0
% OA	5.00%
% Area	10.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 81.60	0% 81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HŘSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

DATE:

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06-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

175

System Type

2

System Name: System Number: H&V UNIT AHU5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	10,725.7	0.0	
Optimum ST/SP	0.0	824.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	182.5	
Sub Total	0.0	11,550.2	182.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	66.0	•
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	, , , , , , , , , , , , , , , , , , , ,
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	11,550.2	248.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10150

Building Sq.Ft.:

18,460

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: AHU6

Typical Building Information

Typical building information							
Category		Construction	Use	Occ.	Day		
	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		4
Load Factor		0.8
CFM - HTG		600
CFM - CLG		0
% OA		0.00%
% Area		1.60%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HŘSAV	2,190	

CONSTANT	I OOK-UP	INPUT
HOAUH	Carlo Santa Carlo Carlo	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC		0.00E+00
HOAOH	39.67	39.67
НОАОНС	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR		7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

06-Apr-95

DATE:

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

10150

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,614.1	0.0	**************************************
Optimum ST/SP	0.0	567.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	27.7	
Sub Total	0.0	7,181.9	27.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	10.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	7,181.9	37.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

175

EMC NO.: 1406-006

DATE: 06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

19,439

System Type

System Name:

CONVERTER AND PUMPS

System Number: HE1

Typical Building Information

	Typicar Banding information								
Category Construction		Construction	Use	Occ.	Day				
-		16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT					
Motor HP		2					
Load Factor		0.8					
CFM - HTG		0					
CFM - CLG	CFM - CLG						
% OA		0.00%					
% Area		7.40%					
TON CAPC.		0					
MBTU CAPC.		1.5064					
kW/Ton		0					
MOSON		7					
EFF		1					
LOOK-UP VALUE							
EFFHP	78.00%	78.00%					

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
· ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

175

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	3,349.5	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	135.1	
Sub Total	0.0	3,637.0	135.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	48.8	
HW OA Reset	0.0	0.0	11.1	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	3,637.0	195.0	3

ENERGY CALCULATIONS

BUILDING 1750

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

226

1750

Building Sq.Ft.:
System Type

38,336 12

System Name:

BASEBOARD RADIATION

System Number:

FT1-8

Typical Building Information

Typical Building Information								
Category Construction		Use	Occ.	Day				
2	BRICK	MOTOR REPAIR SHOP	0600-1730	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1500	1500	1500	1500	1500	0

BLDG:

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		7.50%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		0.8
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,000	3,360
Heating HRSON	1,600	5,376
C/H HRSON	2,607	8,760
Cooling HRSAV	2,360	
Heating HRSAV	3,776	
C/H HRSAV	6,153	

CONSTANT	LOOK-UP	INPUT
HOAUF	· · · · · · · · ·	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	198.24	198.24
HOAOHO	121.66	121.66
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.04E+03	2.04E+03
NSC	5.85E+04	5.85E+04
FV	0	0
CHWF	9.57	9.57
OAF	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

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28-Mar-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

1750

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FT1-8

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	•
Night Setback	0.0	0.0	168.1	
Sub Total	0.0	0.0	168.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	5.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		·····		
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	174.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

1750

10-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

38,336

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

Typical Building Information

Typical Dallang Information							
Category	Construction	Use	Occ.	Day			
	2 BRICK	MOTOR REPAIR SHOP	0600-1730	MON-FRI			

Enter Weeks of Summer:

32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700		700	700	700	0
Stop Time	0	1500	1500	1500	1500	1500	0

BLDG:

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		7.5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		1.3878
kW/Ton		0
MOSON		7
EFF		0.8
LOOK-UP VALUE		
EFFHP	83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,000	3,360
Heating HRSON	1,600	5,376
C/H HRSON	2,607	8,760
Cooling HRSAV	2,360	
Heating HRSAV	3,776	
C/H HRSAV	6,153	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	198.24	198.24
HOAOHC	121.66	121.66
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.04E+03	2.04E+03
NSC	5.85E+04	5.85E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

10-Apr-95 PAGE 2 OF 2

Bidg Number:

1750

System Type

1

System Name:

HOT WATER BOILER AND PUMPS

System Number: B1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	20,327.7	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	21,339.8	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	12.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	21,339.8	12.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

1750

EMC NO.: 1406-006 28-Mar-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

38,336

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV1

Typical Building Information

Category Construction Use		Use	Occ.	Day
2	BRICK	MOTOR REPAIR SHOP	0600-1730	MON-FRI

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1500	1500	1500	1500	1500	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		7.5
Load Factor		0.8
CFM - HTG		3290
CFM - CLG		0
% OA		10.00%
% Area		20.50%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	83.10%	83.10%

HOURS	REQUIRED	PRESENT
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	1,000	3,360
Heating HRSON	1,600	5,376
C/H HRSON	2,607	8,760
Cooling HRSAV	2,360	
Heating HRSAV	3,776	
C/H HRSAV	6,153	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	198.24	198.24
НОАОНС	121.66	121.66
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC	2.04E+03	2.04E+03
NSC	5.85E+04	5.85E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

28-Mar-95 PAGE 2 OF 2

Bldg Number:

1750

System Type

.

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	33,123.3	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	459.6	
Sub Total	0.0	34,135.3	459.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	36.
DDC Control	0.0	0.0	16.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	. ,
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	34,135.3	475.6	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG: 1750 EMC NO.: 1406-006

28-Mar-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

Building Sq.Ft.:

38,336

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV2

Typical Building Information

Typical Zallaning Intermitation						
Category		Construction	Use	Occ.	Day	
, ,	2	BRICK	MOTOR REPAIR SHOP	0600-1730	MON-FRI	

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1500	1500	1500	1500	1500	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	Table 1		INPUT
Moto	r HP		2
Load F	actor		0.8
CFM -	HTG		1230
CFM -	CLG		0
9/	OA		10.00%
%.	Area		12.13%
TON CA	APC.		0
MBTU C	APC.		0
kV	I/Ton		0
MC	SON	-	12
	EFF		1
LOOK-UP VALUE			
EF	FHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,000	3,360
Heating HRSON	1,600	5,376
C/H HRSON	2,607	8,760
Cooling HRSAV	2,360	
Heating HRSAV	3,776	
C/H HRSAV	6,153	

CONSTANT	LOOK-UP			
HOAUH	0.00	0.00		
HOAUHC	0.00	0.00		
COAUC	0.00E+00	0.00E+00		
COAUHC	0.00E+00	0.00E+00		
НОАОН	198.24	198.24		
HOAOHC	121.66	121.66		
COAOC	0.00E+00	0.00E+00		
COAOHC	0.00E+00	0.00E+00		
DC DUTY	0.00	0.00		
DC DEMAN	0.17	0.17		
ECC	0.00E+00	0.00E+00		
ECHC	0.00E+00	0.00E+00		
NSUCC	0.00E+00	0.00E+00		
NSUCHC	0.00E+00	0.00E+00		
DDCCHC	0.00E+00	0.00E+00		
DDCCC	0.00E+00	0.00E+00		
DSC	2.04E+03	2.04E+03		
NSC	5.85E+04	5.85E+04		
FV	0	0		
CHWR	9.57	9.57		
OAR	7.40	7.40		
OPT	188.00	188.00		

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

28-Mar-95 PAGE 2 OF 2

Bldg Number:

1750

System Type

1 H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	9,410.4	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	10000
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	272.0	
Sub Total	0.0	9,697.9	272.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	9.5	Para de la companya del companya de la companya de la companya del companya de la
HW OA Reset	0.0	0.0	0.0	** - 1
Chilled Water Reset	0.0	0.0	0.0	170 T. W. W. W.
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	9,697.9	281.4	3.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

38,336

1750

Building Sq.Ft.: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV3

Typical Building information								
Category		Construction	Use	Occ.	Day			
	2	BRICK	MOTOR REPAIR SHOP	0600-1730	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1500	1500	1500	1500	1500	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1.5
Load Factor		0.8
CFM - HTG		4850
CFM - CLG		0
% OA		100.00%
% Area		48.10%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS	REQUIRED	
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	1,000	3,360
Heating HRSON	1,600	5,376
C/H HRSON	2,607	8,760
Cooling HRSAV	2,360	
Heating HRSAV	3,776	
C/H HRSAV	6,153	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	198.24	198.24
HOAOHC	121.66	121.66
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC	2.04E+03	2.04E+03
NSC	5.85E+04	5.85E+04
FV	0	0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

28-Mar-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

28-Mar-95

PAGE 2 OF 2

Bldg Number:

1750

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	7,955.3	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	1,078.4	
Sub Total	0.0	8,198.4	1,078.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	37.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				, , , , , , , , , , , , , , , , , , , ,
Run Time, and Safety Alarms				3
TOTAL	0.0	8,198.4	1,116.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

1750

DATE: 28-Mar-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

38,336

System Type

7

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: HV4

Typical Building Information

	Typicar Danama									
	Category Construction		Use	Occ.	Day					
Ì		2	BRICK	MOTOR REPAIR SHOP	0600-1730	MON-FRI				

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1500	1500	1500	1500	1500	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1.5
Load Factor		0.8
CFM - HTG		4000
CFM - CLG		0
% OA		100.00%
% Area		9.91%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,000	3,360
Heating HRSON	1,600	5,376
C/H HRSON	2,607	8,760
Cooling HRSAV	2,360	
Heating HRSAV	3,776	
C/H HRSAV	6,153	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	198.24	198.24
HOAOHC	121.66	121.66
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.04E+03	2.04E+03
NSC	5.85E+04	5.85E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

28-Mar-95 PAGE 2 OF 2

Bldg Number:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	7,955.3	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	The second of th
Night Setback	0.0	0.0	222.2	
Sub Total	0.0	8,198.4	222.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	7.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	8,198.4	229.9	3

ENERGY CALCULATIONS

BUILDING 2049

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2049

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

16,704

System Type

System Name:

H&V UNIT HV1

System Number:

Typical Building Information

Typical bullding information						
Category		Construction	Use	Occ.	Day	
	3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI	

20 32

Enter Weeks of Summer:	20
Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		12.5
Load Factor		0.8
CFM - HTG		9000
CFM - CLG		0
% OA		100.00%
% Area		37.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2049

System Type

2

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,633.7	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	142.3	
Sub Total	0.0	1,633.7	142.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,633.7	142.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2049

DATE: 06-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

16,704

System Type System Name: 2 H&V UNIT

System Number:

HV2

Typical Building Information

Typical Dulling Internation							
Category		Construction	Use	Occ.	Day		
Outegory	3		MNT HANGAR AVUM-HANG	0600-2200	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	8
		600	600	600	600	600	0
Start Time		1800	1800	1800	1800	1800	0
Stop Time		1800	1000		L	J	

						-	
Present Operations	S	М	T	W	TH		3
		600	600	600	600	600	0
Start Time			1800	1800	1800	1800	0
Stop Time	U	1800	1000	1000	1000	L	

INPUTS		INPUT
Motor HP		10
Load Factor		0.8
CFM - HTG		6300
CFM - CLG		0
% OA		100.00%
% Area		26.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0]
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC		0.00E+00
DC DUTY	0.00	0.00
DC DEMAND		0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHO		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
F۷		0
CHWR		9.57
OAF	7.40	7.40
OP1	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2049

System Type System Name:

2 **H&V UNIT**

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,307.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	100.0	
Sub Total	0.0	1,307.0	100.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,307.0	100.0	<u> </u>

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2049

EMC NO.: 1406-006

DATE: 06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

16,704

10,707

System Name:

H&V UNIT

System Number:

HV3

Typical Building Information

Typical ballang mornation							
Category	Construction Use		Occ.	Day			
3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI			

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		12.5
Load Factor		0.8
CFM - HTG		· 9000
CFM - CLG		0
% OA		100.00%
% Area		37.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	. 7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2049

System Type

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,633.7	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	142.3	
Sub Total	0.0	1,633.7	142.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,633.7	142.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

2049

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

15,836

System Type System Name:

H&V UNIT

System Number:

HV4

Typical Building Information

rypion building intermedia							
Category		Construction	Use	Occ.	Day		
	28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

BLDG:

Start Time 0	0	0		Λ.	· Λ	. n
	U I	U	U	U		<u> </u>
Stop Time 2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	7.5
Load Factor	0.8
CFM - HTG	9750
CFM - CLG	0
% OA	100.00%
% Area	31.80%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	11	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2049

System Type

2

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	27,509.1	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	135.8	
Sub Total	0.0	28,521.2	135.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	25.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	•			
Run Time, and Safety Alarms				3
TOTAL	0.0	28,521.2	161.7	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2049

06-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

15,836

System Type

H&V UNIT

System Name: System Number:

HV5

Typical Building Information

	rypical L	diang information		
Category	Construction	Use	Occ.	Day
28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI

Enter Weeks of Summer:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG		1300
CFM - CLG		0
% OA	100.00%	
% Area		4.24%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2049

System Type

2

System Name: System Number:

H&V UNIT HV5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,574.7	0.0	-
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	18.1	
Sub Total	0.0	12,000.6	18.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,000.6	21.6	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2049

DATE: 06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

15,836

System Type

H&V UNIT

System Name: System Number:

HV6

	Typical B	uilding Information
Category	Construction	Use

Category	Construction	Use	Occ.	Day
28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		8200
CFM - CLG		0
% OA		100.00%
% Area		26.80%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2049

System Type

System Name: System Number: **H&V UNIT** HV6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	18,676.5	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	114.5	
Sub Total	0.0	19,363.7	114.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	21.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	1000
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	19,363.7	136.3	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2049

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

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EMC NO.: 1406-006

Building Sq.Ft.:

15,836

System Type

System Name:

H&V UNIT

HV7

System Number:

Typical Building Information

	Typical Datients							
1	Category	Construction	Use	Occ.	Day			
	28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI			

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		7100
CFM - CLG		0
% OA		100.00%
% Area		23.20%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2049

System Type

2

System Name:

H&V UNIT

System Number: HV7

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	18,676.5	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	99.1	
Sub Total	0.0	19,363.7	99.1	
Economizer	0.0	0.0	0.0	* * * * * * * * * * * * * * * * * * * *
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	18.9	The second secon
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	19,363.7	118.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2049

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

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15,836

Building Sq.Ft.:

10

System Type System Name:

HOT WATER BOILER AND PUMPS

System Number:

B1

Typical Building Information

.,,,							
Category	Construction	Use	Occ.	Day			
2	8 BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI			

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	М	T	w	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		4.8
kW/Ton		0
MOSON		7
EFF		0.8
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	0	1
CHWR	9.57	9.57
OAR		7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

2049

System Type

1

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	44.4	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	44.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2049

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

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Building Sq.Ft.:

15,836

B2

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

Typical Building Information

Typical Ballaing information									
Category	Construction	Use	Occ.	Day					
28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Ston Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	Lawns, La Fullish	INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.	. —	4.8
kW/Ton		0
MOSON		7
EFF		0.8
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
НОАОНС	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	0	1
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2049

10

System Type System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	-
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	44.4	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		·		
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	44.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

s

0

0

2400

1200

0

0

2400

1800

Building Sq.Ft.:

15,836

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

Typical Building Information

	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								
Category		Construction Use		Occ.	Day				
	2	B BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI				

Enter Weeks of Summer:

0

0

2400

1200

20

32

0

0

2400

1800

Enter Weeks of Winter:

Required Operation

Start Time

Stop Time

Start Time

Stop Time

4.0		18/	TU		ı
				,	_
L	,				

0

0

2400

1800

0

0

2400

1800

0

0

2400

1800

2049

Present Operations	S	M	T	W	TH	F	S

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		14.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,560	3,360
Heating HRSON	4,096	5,376
C/H HRSON	6,674	8,760
Cooling HRSAV	800	
Heating HRSAV	1,280	
C/H HRSAV	2,086	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
НОАОНС	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	13,209.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	59.8	
Sub Total	0.0	15,149.4	59.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	11.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	15,149.4	71.2	3

ENERGY CALCULATIONS

BUILDING 2050

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2050

EMC NO.: 1406-006

E: 06-Apr-95

PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

16,704

System Type

2

System Name: System Number: H&V UNIT HV1

Typical Building Information

	, y produ Damania innormation									
Ì	Category Construction		Use	Occ.	Day					
	3	BRICK	MNT HANGAR AVUM-HANG	0600-2200	MON-FRI					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		12.5
Load Factor		0.8
CFM - HTG		9000
CFM - CLG		0
% OA		100.00%
% Area		37.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	. 0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	37.50	37.50
НОАОНС	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bidg Number:

2050

System Type

2 **H&V UNIT**

System Name: System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,633.7	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	142.3	
Sub Total	0.0	1,633.7	142.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,633.7	142.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

16,704

2050

EMC NO.: 1406-006

DATE:

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

2

System Name:

H&V UNIT

System Number:

HV2

Typical Building Information

typical building information								
Category	Construction	Use	Occ.	Day				
3	BRICK	MNT HANGAR AVUM-HANG	0600-2200	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS	INPUT
Motor HP	10
Load Factor	0.8
CFM - HTG	6300
CFM - CLG	0
% OA	100.00%
% Area	26.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

06-Apr-95 PAGE 2 OF 2

Date:

Bldg Number: System Type 2050

System Name:

H&V UNIT

2

System Number:

HV2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,307.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	100.0	
Sub Total	0.0	1,307.0	100.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3_
TOTAL	0.0	1,307.0	100.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

2050

EMC NO.: 1406-006

06-Apr-95 DATE:

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

16,704

System Type System Name:

H&V UNIT

System Number:

HV3

Typical Building Information

	. , ,				
Category	Construction	Use	Occ.	Day	
3	BRICK	MNT HANGAR AVUM-HANG	0600-2200	MON-FRI	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT		
Motor HP		12.5		
Load Factor	Load Factor			
CFM - HTG		9000		
CFM - CLG		0		
% OA	100.00%			
% Area		37.00%		
TON CAPC.		0		
MBTU CAPC.		0		
kW/Ton		0		
MOSON		12		
EFF		1		
LOOK-UP VALUE				
EFFHP	85.80%	85.80%		

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2050

System Type

2

System Name: System Number: H&V UNIT HV3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,633.7	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	142.3	
Sub Total	0.0	1,633.7	142.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,633.7	142.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2050

EMC NO.: 1406-006

DATE:

06-Арг-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

16,020

System Type

2 H&V UNIT

System Name: System Number:

HV4

Typical Building Information

	. , , , , , , , , , , , , , , , , , , ,								
	Category	Construction	Use	Occ.	Day				
-	2	BRICK	MNT HANGAR AVUM - OPS	0600-1800	MON-FRI				

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400
Otop Tillo		L					

INPUTS			INPUT
	tor HP		7.5
Load	Factor		0.8
CFM	- HTG		9750
CFM	- CLG		0
	% OA		100.00%
9,	6 Area		31.80%
TON	CAPC.		0
MBTU	CAPC.		0
k	W/Ton		0
M	OSON		12
	EFF		1
LOOK-UP VALU	E		
E	FFHP	83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
НОАОНС	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2050

System Type

2 **H&V UNIT**

System Name: System Number:

HV4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	27,509.1	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	137.4	
Sub Total	0.0	28,521.2	137.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	26.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	28,521.2	163.6	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2050

EMC NO.: 1406-006

06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

16,020

System Type System Name:

H&V UNIT

System Number:

HV5

Typical Building Information

Typical Dallating Intermediate						
Category	Construction	Use	Occ.	Day		
28	BRICK	MNT HANGAR AVUM - OPS	0600-1800	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	3
Load Factor	0.8
CFM - HTG	1300
CFM - CLG	0
% OA	100.00%
% Area	4.24%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2050

System Type

2 **H&V UNIT**

System Name: System Number:

HV5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,574.7	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	18.3	
Sub Total	0.0	12,000.6	18.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,000.6	21.8	

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2050

EMC NO.: 1406-006

DATE:

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

2 **H&V UNIT**

16,020

System Name: System Number:

HV6

Typical Building Information

Category	Construction	Use	Occ.	Day				
2	BRICK	MNT HANGAR AVUM - OPS	0600-1800	MON-FRI				

Enter Weeks of Summer:

20 2

Enter Weeks of Winter:	32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	5
Load Factor	0.8
CFM - HTG	8200
CFM - CLG	0
% OA	100.00%
% Area	26.80%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	123.59	123.59
НОАОНС	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2050

System Type System Name:

H&V UNIT

System Number:

HV6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	18,676.5	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	115.8	
Sub Total	0.0	19,363.7	115.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	22.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				0
Run Time, and Safety Alarms				3
TOTAL	0.0	19,363.7	137.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2050

DATE: 06-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

System Type

16,020 2

System Name:

H&V UNIT

System Number:

HV7

Typical Building Information

	. , , ,			
Category	Construction	Use	Occ.	Day
28	BRICK	MNT HANGAR AVUM - OPS	0600-1800	MON-FRI

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT				
Motor HP	Motor HP					
Load Factor		0.8				
CFM - HTG		7100				
CFM - CLG		0				
% OA		100.00%				
% Area		23.20%				
TON CAPC.		0				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		12				
EFF		1				
LOOK-UP VALUE						
EFFHP	81.60%	81.60%				

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC		0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
· FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 2050

System Name:

2 H&V UNIT

System Number:

HV7

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	18,676.5	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	100.3	
Sub Total	0.0	19,363.7	100.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	19.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	19,363.7	119.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

2050

EMC NO.: 1406-006

DATE: 06-Арг-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

16,020

System Type

10

System Name:

System Number:

В1

HOT WATER BOILER AND PUMPS

Typical Building Information

Category	Construction	Use	Occ.	Day
28	BRICK	MNT HANGAR AVUM - OPS	0600-1800	MON-FRI

Enter Weeks of Summer:

20

Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0
<u> </u>							

BLDG:

Present Operations	S	М	Т	W	TH	FF	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	4.8
kW/Ton	0.00%
MOSON	7
EFF	80.00%
LOOK-UP VALUE	
EFFHP 0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND		0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	1
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2050

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	44.4	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	44.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2050

EMC NO.: 1406-006

DATE:

06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

16,020

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

Typical Building Information

. 7								
Category	Construction	Use	Occ.	Day				
28	BRICK	MNT HANGAR AVUM - OPS	0600-1800	MON-FRI				

Enter weeks of Summer.	20
Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400
Stop Time					L		

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		4.8
kW/Ton		0.00%
MOSON		7
EFF		80.00%
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	123.59	123.59
НОАОНС	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.0QE.+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	1
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2050

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	<u> </u>
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	· · · · · · · · · · · · · · · · · · ·
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	44.4	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	44.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2050

DATE:

E: 06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

16,020

10,020

System Type System Name:

BASEBOARD RADIATION

System Number:

FTR-1

Typical Building Information

	Typical building information									
Category		Construction Use		Occ.						
	28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	1200	1800	1800	1800	1800	1800	1200

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		14.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,560	3,360
Heating HRSON	4,096	5,376
C/H HRSON	6,674	8,760
Cooling HRSAV	800	
Heating HRSAV	1,280	
C/H HRSAV	2,086	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
НОАОНС	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC		5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	1
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2050

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	13,209.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	*
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	60.5	
Sub Total	0.0	15,149.4	60.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	11.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	15,149.4	72.0	3

ENERGY CALCULATIONS

BUILDING 2060

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2060

DATE:

05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

10,545

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV1

Typical Building Information

. y prout Dullang Internation					
Category	Construction	Use	Occ.	Day	
4	BRICK	MNT HANGAR AVUM - OPS	0000-2400	SUN-SAT	

20 32

Enter Weeks of Summer:	2
Enter Weeks of Winter:	3
—	L

Required Operation S M Start Time 0 0	0	0	0	0	0
Stop Time 2400 2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	19600
CFM - CLG	0
% OA	14.56%
% Area	86.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.70%	6 86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.59E+03	4.59E+03
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bidg Number:

System Type

2060

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	41.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	41.6	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2060

O5-Apr-95

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

37,828

System Type

......

System Name: System Number: H&V UNIT MAU1

Typical Building Information

Typical Dullang								
Category	Construction	Use	Occ.	Day				
3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

INPUTS	11111	Hallian III. Upodala	INPUT
Motor HP			8
Load Factor	-		0.8
CFM - HTG			0
CFM - CLG			0
% OA			100.00%
% Area			8.50%
TON CAPC.			0
MBTU CAPC.			0
kW/Ton			0
MOSON			12
EFF			1
LOOK-UP VALUE			
EFFHP	8	3.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,800	1,600
Heating HRSON	2,880	2,560
C/H HRSON	4,693	4,171
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
- NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2060

System Type

2

System Name:

H&V UNIT

System Number:

MAU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,079.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	74.1	
Sub Total	0.0	1,079.5	74.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,079.5	74.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2060

DATE: 05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

37,828

System Type

H&V UNIT

System Name: System Number:

RMAU1

Typical Building Information

Typical Building Information								
Category	Construction	Use	Occ.	Day				
	3 BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		9320
CFM - CLG		0
% OA		100.00%
% Area		15.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,800	1,600
Heating HRSON	2,880	2,560
C/H HRSON	4,693	4,171
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	. 7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95

PAGE 2 OF 2

Bldg Number:

2060

System Type

2

System Name:

H&V UNIT

System Number:

RMAU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	133.3	
Sub Total	0.0	1,940.1	133.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	133.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

37,828

2060

05-Apr-95 DATE:

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name: System Number: **H&V UNIT** RMAU2

Typical Building Information

Typical Danamy micrimation								
Category Construction		Use	Occ.	Day				
	3 BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

INPUTS	1000	INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		9320
CFM - CLG		0
% OA		100.00%
% Area		15.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,800	1,600
Heating HRSON	2,880	2,560
C/H HRSON	4,693	4,171
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 2060

System Type
System Name:

2 H&V UNIT

System Number:

RMAU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	133.3	
Sub Total	0.0	1,940.1	133.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	,			
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	133.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

37,828

2060

EMC NO.: 1406-006

DATE: 05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

07,020

System Type

2

System Name:

H&V UNIT

System Number:

RMAU3

Typical Building Information

.) prod									
Category	Construction	Use	Occ.	Day					
3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

BLDG:

Present Operations	S	M	Т	V	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG	9320	
CFM - CLG		0
% OA		100.00%
% Area		15.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,800	1,600
Heating HRSON	2,880	2,560
C/H HRSON	4,693	4,171
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bidg Number:

2060

System Type

System Name:

H&V UNIT

System Number:

RMAU3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	133.3	
Sub Total	0.0	1,940.1	133.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	133.3	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY** BLDG:

LOCATION: FT. DRUM

37,828

2060

EMC NO.: 1406-006

DATE: 05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type System Name: 2

H&V UNIT RMAU4

System Number:

Typical Building Information							
Categ	ory	Construction	Use	Occ.	Day		
	3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI		

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т_	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

Present Operations	\$	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	9320
CFM - CLG	0
% OA	100.00%
% Area	15.30%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86	6.70% 86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,800	1,600
Heating HRSON	2,880	2,560
C/H HRSON	4,693	4,171
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
НОАОНС	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	. 7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2060

System Type

System Name:

H&V UNIT

System Number:

RMAU4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	-
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	133.3	
Sub Total	0.0	1,940.1	133.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		·		
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	133.3	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2060

DATE:

05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.: System Type

37,828

System Name:

H&V UNIT

System Number:

RMAU5

Typical Building Information

	Typical Dallang Internation								
	Category	Construction	Use	Occ.	Day				
ŀ	3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI				

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	9320
CFM - CLG	0
% OA	100.00%
% Area	15.30%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,800	1,600
Heating HRSON	2,880	2,560
C/H HRSON	4,693	4,171
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bidg Number:

2060

System Type

H&V UNIT

System Name: System Number:

RMAU5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	133.3	
Sub Total	0.0	1,940.1	133.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	0.000
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	133.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2060

EMC NO.: 1406-006 DATE:

05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

Building Sq.Ft.:

37,828

System Type

System Name:

H&V UNIT

System Number:

RMAU6

Typical Building Information

Typica, Daniang									
Category Construction		Use	Occ.	Day					
	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI					

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

Present Operations	S	M		T	W	TH	F	S
Start Time		0	600	600	600	600	600	0
Stop Time		0 2	200	2200	2200	2200	2200	0

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		9320
CFM - CLG		0
% OA		100.00%
% Area		15.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

	REQUIRED	Larger and district to the
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	1,800	1,600
Heating HRSON	2,880	2,560
C/H HRSON	4,693	4,171
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2060

System Type

2

System Name:

H&V UNIT

System Number:

RMAU6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	133.3	
Sub Total	0.0	1,940.1	133.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	133.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

DATE:

05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

2060

Building Sq.Ft.:

10,545

10 System Type

System Name: System Number: HOT WATER BOILER AND PUMPS

B1

Typical Building Information

. y piour Dantaing internation									
Category	Construction	nstruction Use Occ.		Day					
4	BRICK	MNT HANGAR AVUM - OP	0000-2400	SUN-SAT					

Enter Weeks of Summer:

20 32

Required Operation	S	М	Т	W	TH	F F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		4.8
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.59E+03	4.59E+03
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	. 7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bidg Number: System Type 2060

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	35.5	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		<u> </u>		
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	35.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2060

05-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

37,828

10 System Type System Name:

System Number:

HOT WATER BOILER AND PUMPS

Typical Building Information

·/F:						
Category	Construction	Use	Occ.	Day		
	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI		

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	2200	2200	2200	2200	2200	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS			INPUT
Mot	or HP		0
Load	Factor		0.8
CFM ·	- HTG		0
CFM	- CLG		0
	% OA		0.00%
%	Area		0.00%
TON	CAPC.		0
MBTU	CAPC.		4.8
k	W/Ton		0
М	OSON		7
	EFF		1
LOOK-UP VALU	E		
E	FFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,800	3,360
Heating HRSON	2,880	5,376
C/H HRSON	4,693	8,760
Cooling HRSAV	1,560	
Heating HRSAV	2,496	
C/H HRSAV	4,067	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2060

System Type

System Name:

HOT WATER BOILER AND PUMPS

System Number: B2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	35.5	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	35.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

2060

EMC NO.: 1406-006

05-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

10,545

12

System Type System Name:

BASEBOARD RADIATION

System Number:

RAD

Typical Building Information

Typical Ballang Information								
Category		Construction	Use	Occ.	Day			
	4	BRICK	MNT HANGAR AVUM - OP	0000-2400	SUN-SAT			

Enter Weeks of Summer:

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

BLDG:

Present Operations	S	M	Т	W	TH	F	S
Start Time		0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		14.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS		PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.59E+03	4.59E+03
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2060

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

RAD

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	6.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	6.8	3

ENERGY CALCULATIONS

BUILDING 2065

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2065

EMC NO.: 1406-006

ATE: 02-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

20,144

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B1

Typical Building Information

		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			,
Category Construction		Use	Occ.	Day	
j		5 BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT

Enter Weeks of Summer:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		1.26
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bidg Number:

2065

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	•
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	VV-2004-0
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	9.3	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	9.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2065

02-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

20,144

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

Typical Building Information

Typica: Danaing in contact								
Category Construction		Use	Occ.	Day				
5	BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT				

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG		0
CFM - CLG	0	
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		1.26
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	A
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	9.3	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	9.3	· · · · · · · · · · · · · · · · · · ·

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY** BLDG:

LOCATION: FT. DRUM

20,144

2065

02-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

12

System Type

System Name:

BASEBOARD RADIATION

System Number:

HX1

Typical Building Information

Typical Dullang III of the Control o									
Category Construction		Use	Occ.	Day					
5	BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT					

Enter Weeks of Summer:

2

Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	5
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	10.70%
TON CAPC.	0
MBTU CAPC.	1.0984
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 81.60	% 81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HŘSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HX1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	APPARENTE STATE OF THE STATE OF
DDC Control	0.0	0.0	124.9	
HW OA Reset	0.0	0.0	8.1	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	The state of the s
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		•		
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	133.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2065

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DATE: 02-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

20,144

System Type

2

System Name:

H&V UNIT

System Number:

H&V UN

Typical Building Information

.,, p						
Category	Construction	Use	Occ.	Day		
	4 BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI		

Enter Weeks of Summer:

20

nter Weeks of Winter:	32

Required Operation	5	IVI		44	111	·	
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400
<u> </u>							

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		2215
CFM - CLG		0
% OA		12.66%
% Area		12.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE	•	
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

2

System Name:

H&V UNIT

System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	•
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	124.5	
Sub Total	0.0	287.5	124.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	14.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	·			
Run Time, and Safety Alarms				3
TOTAL	0.0	287.5	139.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

20,144

2065

Building Sq.Ft.: System Type

System Name:

System Number:

H&V UNIT

HV2

	Typical Building Information							
Category		Construction	Use	Occ.	Day			
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	5-14 BBH 1	INPUT
Motor HP		7.5
Load Factor		0.8
CFM - HTG		6545
CFM - CLG		0
% OA		65.80%
% Area		37.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	10 harris of hard four highly
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

		I I I I I I I I I I I I I I I I I I I
CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

02-Apr-95

DATE:

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

H&V UNIT

System Name: System Number:

HV2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	369.4	
Sub Total	0.0	1,012.1	369.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	44.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,012.1	413.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY BLDG:

LOCATION: FT. DRUM

2065

EMC NO.: 1406-006

02-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

4,322

System Type

System Name:

H&V UNIT

System Number:

HV3

Typical Building Information

Typical Building thornaudi.							
Category		Construction	Use	Occ.	Day		
	6	BRICK	AF OPS BUIDING-ADMIN	0600-1700	MON-FRI		

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	М	Ŧ	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		6545
CFM - CLG		0
% OA		12.68%
% Area		64.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	24.90	24.90
HOAOHC	12.42	12.42
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	7.70E+03	7.70E+03
NSC	2.89E+04	2.89E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

2

System Name:

H&V UNIT

System Number:

HV3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	19,629.4	0.0	3
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	79.9	
Sub Total	0.0	20,316.6	79.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	21.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL 1 Part 1 Page 1	0.0	20,316.6	101.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2065

DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

02-Apr-95

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

20,144

System Type

System Name:

H&V UNIT HV4

System Number:

Typical Building Information

Typical Panang internal								
Category Construction		Use	Occ.	Day				
14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI				

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT					
Motor HP		5					
Load Factor		0.8					
CFM - HTG							
CFM - CLG	CFM - CLG						
% OA		31.60%					
% Area		17.30%					
TON CAPC.		· 0					
MBTU CAPC.		0					
kW/Ton		0					
MOSON		12					
EFF		1_					
LOOK-UP VALUE							
EFFHP	81.60%	81.60%					

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

2

System Name: System Number: **H&V UNIT** HV4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	169.5	
Sub Total	0.0	687.1	169.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	20.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	687.1	189.9	3 ·

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY** BLDG:

LOCATION: FT. DRUM

2065

DATE:

02-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

20,144

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								
Category Construction		Use	Occ.	Day				
5	BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT				

Enter Weeks of Summer:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.5
Load Factor		0.8
CFM - HTG		900
CFM - CLG		0
% OA	-	43.40%
% Area		5.23%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0]

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	,
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	61.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	61.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2065

02-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

20,144

System Type

Stop Time

MU2

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

Typical Building Information

typical Danating Information								
Category		Construction	Use	Occ.	Day			
	5	BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1.5
Load Factor		0.8
CFM - HTG		3840
CFM - CLG		0
% OA		100.00%
% Area		22.10%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton	·	0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HUAUH		0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	258.0	
HW OA Reset	0.0	0.0	0.0	·
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	258.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2065

DATE: 02-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

20,144

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								
Category	Construction	Use	Occ.	Day				
5	BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT				

Enter Weeks of Summer:

32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	w	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		1000
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC		1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC		5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR		7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 2065

System Type
System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AC1

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	7.3	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	7.3	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0		0.0	CONTRACT CON
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	"
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		•		
Run Time, and Safety Alarms				3
TOTAL	7.3	0.0	0.0	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

2065

02-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

20,144

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

BLDG:

System Number: AC2

Typical Building Information

Category	Construction	Use	Occ.	Day
5	BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT				
Motor HP	5					
Load Factor		0.8				
CFM - HTG		0				
CFM - CLG	CFM - CLG					
% OA	0.00%					
% Area		0.00%				
TON CAPC.		0				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		5				
EFF		1				
LOOK-UP VALUE						
EFFHP	81.60%	81.60%				

	REQUIRED	and all the transfer of the control
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AC2

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	-
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	7.3	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	7.3	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0		0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	·
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	7.3	0.0	0.0	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2065

PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

20,144

System Type

3

AC4

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

Typical Building Information								
Category	Construction	Use	Occ.	Day				
5	BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT				

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	775,388	INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		1000
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AC4

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	· · · · · · · · · · · · · · · · · · ·
Duty Cycle	0.0	0.0	0.0	
Demand Limit	7.3	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	7.3	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0		0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	7.3	0.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

2065

EMC NO.: 1406-006 CHECKED BY: KC/WLC

02-Apr-95 PREPARED BY: CSW/BMG

PAGE 1 OF 2

Building Sq.Ft.:

20,144

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

BLDG:

System Number: AC4A

Typical Building Information

	. , , , , , , , , ,			
Category	Construction	Use	Occ.	Day
5	BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT

Enter Weeks of Summer:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		1000
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHO		0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC		4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AC4A

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	7.3	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	7.3	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0		0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms		3		
TOTAL	7.3	0.0	0.0	3.0

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2065

02-Арг-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

Typical Building Information

Typical Daniening							
Category	Construction	Use	Occ.	Day			
5	BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0_	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		1000
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT LOOK-UP INPUT HOAUH 0.00 0.
HOAUHC 0.00 0.0
004110 0005100 000510
COAUC 0.00E+00 0.00E+0
COAUHC 0.00E+00 0.00E+0
HOAOH 0.00 0.0
HOAOHC 0.00 0.0
COAOC 0.00E+00 0.00E+0
COAOHC 0.00E+00 0.00E+0
DC DUTY 0.00 0.0
DC DEMAN 0.17 0.1
ECC 0.00E+00 0.00E+0
ECHC 0.00E+00 0.00E+0
NSUCC 0.00E+00 0.00E+0
NSUCHC 0.00E+00 0.00E+0
DDCCHC 1.43E-04 1.43E-0
DDCCC 4.29E-04 4.29E-0
DSC 5.79E+04 5.79E+0
NSC 0.00E+00 0.00E+0
FV 0
CHWR 9.57 9.5
OAR 7.40 7.4
OPT 0.00 0.0

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AC5

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	7.3	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	7.3	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0		0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	7.3	0.0	0.0	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

AC6

LOCATION: FT. DRUM

BLDG:

2065

02-Apr-95 DATE:

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

20,144

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

Typical Building Information

Typical Building Information								
Category	Construction	Use	Occ.	Day				
5	BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT				

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS			INPUT
Mo	tor HP		20
Load	Factor		0.8
CFM	- HTG		0
CFM	- CLG		1600
	% OA		0.00%
9,	6 Area		0.00%
TON	CAPC.		0
MBTU	CAPC.		0
k	:W/Ton		0
N	IOSON		5
	EFF		1
LOOK-UP VALU	JE		
E	FFHP	88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	0.00	0.00
HOAOHC	0.00	0.00
COAOC		0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

3

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AC6

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	27.1	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	27.1	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0		0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	27.1	0.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2065

02-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

20,144

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

Typical Building Information

Typical Daniellig Internation								
Category	Construction	Use	Occ.	Day				
	5 BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT				

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		20
Load Factor		0.8
CFM - HTG		0
CFM - CLG		1600
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

3

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AC7

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	•
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	27.1	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	27.1	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0		0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	27.1	0.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

20,144

2065

EMC NO.: 1406-006

DATE:

02-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

BLDG:

System Number:

AC8

Typical Building Information

	. , p			
Category	Construction	Use	Occ.	Day
	5 BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		700
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AC8

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	7.3	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	7.3	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0		0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		<u> </u>		
Run Time, and Safety Alarms				3
TOTAL	7.3	0.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2065

EMC NO.: 1406-006

02-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

20,144

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

Typical Building Information

Typical Danding Information							
Category	Construction	Use	Occ.	Day			
	5 BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT					
Motor HP							
Load Factor		0.8					
CFM - HTG		0					
CFM - CLG		2415					
% OA	0.00%						
% Area		0.00%					
TON CAPC.		0					
MBTU CAPC.		0					
kW/Ton		0					
MOSON		5					
EFF		1					
LOOK-UP VALUE							
EFFHP	83.10%	83.10%					

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

3

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AC9

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	10.8	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	10.8	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0		0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	10.8	0.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2065

EMC NO.: 1406-006 DATE: 02-Apr-95

2400

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

20,144

2400

System Type System Name:

Stop Time

11 CONDENSING UNIT

System Number:

ACC1

Typical Building Information

Typical Danaling Internation							
Category Construction		Use	Occ.	Day			
	5 BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT			

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	
					0.400	0.400	

2400

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

2400

2400

2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		1.8
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

2400

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

11

System Name:

CONDENSING UNIT

System Number:

ACC1

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	-
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	1.4	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	1.4	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	17.2	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	1.4	17.2	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2065

EMC NO.: 1406-006

TE: 02-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

20,144

11

System Type System Name:

CONDENSING UNIT

System Number:

ACC2

Typical Building Information

	Typical Building Intermediate									
Category	Category Construction		Use	Occ.	Day					
	5	BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT					

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		1.8
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	In the second control of the second contr
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

11

System Name:

CONDENSING UNIT

System Number:

ACC2

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	•
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	1.4	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	1.4	0.0	0.0	
Economizer	0.0	0.0	0.0	,
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	17.2	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		·		
Run Time, and Safety Alarms				3
TOTAL	1.4	17.2	0.0	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

20,144

2065

02-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type

11

System Name:

CONDENSING UNIT

System Number:

ACC4

Typical Building Information

Typical Danaing interior									
Category	Category Construction		Occ.	Day					
	5 BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		1.8
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	66 567 J. 11 S. Out, 616 A681
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

11

System Name:

CONDENSING UNIT

System Number:

ACC4

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	1.4	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	1.4	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	17.2	0.0	•
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	1.4	17.2	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2065

DATE: 02-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

20,144

System Type

11

System Name:

CONDENSING UNIT

System Number:

ACC5

Typical Building Information

Typical Building Information							
Category	Construction	on Use		Day			
	5 BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	00	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT					
Motor HP	0.75						
Load Factor		0.8					
CFM - HTG		0					
CFM - CLG		0					
% OA		0.00%					
% Area	0.00%						
TON CAPC.		1.8					
MBTU CAPC.	0						
kW/Ton		0					
MOSON		5					
EFF	1						
LOOK-UP VALUE	LOOK-UP VALUE						
EFFHP	65.00%	65.00%					

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

11

System Name:

CONDENSING UNIT

System Number:

ACC5

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	1.4	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	1.4	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	17.2	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	1.4	17.2	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2065

EMC NO.: 1406-006

DATE: 02-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

20,144

System Type

11

System Name:

CONDENSING UNIT

System Number:

ACC6

Typical Building Information

.,,,,							
Category	Construction	Use	Occ.	Day			
5	BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT				
Motor HP		0.75				
Load Factor		0.8				
CFM - HTG		0				
CFM - CLG		0				
% OA		0.00%				
% Area		0.00%				
TON CAPC.		2.92				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		5				
EFF		1				
LOOK-UP VALUE	LOOK-UP VALUE					
EFFHP	65.00%	65.00%				

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	0.00	0.00
НОАОНС		0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR		7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

2065

System Type

11

System Name:

CONDENSING UNIT

System Number:

ACC6

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	1.4	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	1.4	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	27.9	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				4
Run Time, and Safety Alarms				3
TOTAL	1.4	27.9	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2065

EMC NO.: 1406-006

02-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

20,144 11

System Name:

CONDENSING UNIT

System Number:

ACC7

Typical Building Information

Typical Dunaning information						
Category	Construction	Use	Occ.	Day		
	5 BRICK	AF OPS BUILDING-NON A	0000-2400	SUN-SAT		

Enter Weeks of Summer:

32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

	INPUTS		INPUT
	Motor HP		0.75
	Load Factor		0.8
	CFM - HTG		0
	CFM - CLG		0
	% OA		0.00%
	% Area		0.00%
	TON CAPC.		2.92
	MBTU CAPC.		0
	kW/Ton		0
	MOSON		5
	EFF		1
LOOP	C-UP VALUE		
	EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	1.43E-04	1.43E-04
DDCCC	4.29E-04	4.29E-04
DSC	5.79E+04	5.79E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bidg Number:

2065

System Type

System Name:

CONDENSING UNIT

System Number:

ACC7

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	1.4	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	1.4	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	27.9	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	1.4	27.9	0.0	

ENERGY CALCULATIONS

BUILDING 2070

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2070

DATE:

05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

10,545

System Type System Name:

System Number:

HV1

H&V UNIT WITHOUT RETURN FAN

Typical Building Information								
Category	Construction	Use	Occ.	Day				
28	BRICK	MNT HANGAR AVUM - OPS	600-1800	MON-FRI				

Elifet Asears of Saturder.	20
Enter Weeks of Winter:	32

Required Operation	S	М	T	w	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		10020
CFM - CLG	0	
% OA		14.56%
% Area		57.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	. 9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2070

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	52,733.8	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	1,591.5	
Sub Total	0.0	54,673.9	1,591.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	303.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	54,673.9	1,894.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2070

EMC NO.: 1406-006

DATE: 05-Apr-95
PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

Building Sq.Ft.:

10,545

System Type

t e

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV2

Typical Building Information

Category Construction		Construction	Use	Occ.	Day	
	28	BRICK	MNT HANGAR AVUM - OPS	600-1800	MON-FRI	

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	5
Load Factor	0.8
CFM - HTG	3900
CFM - CLG	0
% OA	14.56%
% Area	22.40%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2070

System Type

1 **H&V UNIT WITHOUT RETURN FAN**

System Name: System Number:

HV2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	18,676.5	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	617.9	
Sub Total	0.0	19,363.7	617.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	117.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	19,363.7	735.6	3.0

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

2070

05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

System Type

10,545

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV3

Typical Building Information

	, y piour L	anang morning		
Category	Construction	Use	Occ.	Day
2	8 BRICK	MNT HANGAR AVUM - OPS	600-1800	MON-FRI

Tutan Marka of Cummer

Enter Weeks of Summer:	20
Enter Weeks of Winter:	32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

BLDG:

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		1020
CFM - CLG		0
% OA		27.00%
% Area		5.87%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	1
CHWR	9.57	. 9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2070

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	3,516.9	0.0	
Optimum ST/SP	0.0	129.4	0.0	F. =16
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	161.9	
Sub Total	0.0	3,646.3	161.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	30.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		THE PERSON NAMED IN COLUMN TO THE PE		
Run Time, and Safety Alarms				3
TOTAL	0.0	3,646.3	192.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

774

2070

EMC NO.: 1406-006

DATE: 05-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

91,771

System Type

2 H&V UNIT

System Name: System Number:

MAU1

Typical Building Information

	typical building information									
Category		Construction	Use	Occ.	Day					
	3	BRICK	MNT HANGAR AVUM-HANG	0600-2200	MON-FRI					

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

BLDG:

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		12.5
Load Factor		0.8
CFM - HTG		14746
CFM - CLG		0
% OA	100.00%	
% Area		12.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bidg Number:

2070

System Type

2

System Name: System Number **H&V UNIT** 11

		•
r:	MAU	•

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,633.7	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	260.0	
Sub Total	0.0	1,633.7	260.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,633.7	260.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2070

EMC NO.: 1406-006

05-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

91,771

System Type System Name:

H&V UNIT

System Number:

MAU2

Typical Building Information

Typical building information									
Category	Construction	Use	Occ.	Day					
3	BRICK	MNT HANGAR AVUM-HANG	0600-2200	MON-FRI					

Enter Weeks of Summer:

Enter Weeks of Winter:	32

Required Operation	S	l M		VV	111	<u> </u>	
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0
Otop Time							

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		13945
CFM - CLG		0
% OA		100.00%
% Area		11.60%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2070

System Type

2

System Name: System Number:

H&V UNIT MAU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	245.2	
Sub Total	0.0	1,940.1	245.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	245.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2070

EMC NO.: 1406-006

CHECKED BY: KC/WLC

05-Apr-95 PREPARED BY: CSW/BMG

PAGE 1 OF 2

Building Sq.Ft.:

System Type System Name:

H&V UNIT

System Number:

RMAU1

Typical Building Information

Typical ballating information							
Category	Construction	Use	Occ.	Day			
	3 BRICK	MNT HANGAR AVUM-HANG	0600-2200	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	(600	600	600	600	600	0
Stop Time	(1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		10395
CFM - CLG		0
% OA	100.00%	
% Area		8.46%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 2070

System Name:

2 H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	***
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	178.8	
Sub Total	0.0	1,940.1	178.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,			-	
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	178.8	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

91,771

2070

EMC NO.: 1406-006

DATE: 05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name:

H&V UNIT

System Number:

RMAU2

Typical Building Information

Typious Zumanig more								
Category	Construction Use		Occ.	Day				
3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	<u>F</u>	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		10395
CFM - CLG	0	
% OA	100.00%	
% Area		8.40%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2070

System Type

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	177.5	
Sub Total	0.0	1,940.1	177.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	177.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2070

EMC NO.: 1406-006 05-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

91,771

2

System Type

System Name: System Number: **H&V UNIT** RMAU3

Typical Building Information

Typious Danaing intermedia									
Category Construction		Use	Occ.	Day					
3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		10395
CFM - CLG		0
% OA		100.00%
% Area		8.40%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC		0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2070

System Type

H&V UNIT

System Name: System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	177.5	
Sub Total	0.0	1,940.1	177.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		•		
Run Time, and Safety Alarms				3
	0.0	1,940.1	177.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

2070

EMC NO.: 1406-006

ATE: 05-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

Ft.: 91,771

System Type

2

System Name: System Number:

H&V UNIT RMAU4

Typical Building Information

	· / piour our ing morning in the contract of t									
ſ	Category Construction		Use	Occ.	Day					
Ì	3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Winter: 3

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS			INPUT			
Mot	15					
Load	Load Factor					
CFM ·	HTG		10395			
CFM	- CLG		0			
	% OA					
%	8.40%					
TON C	APC.		0			
MBTU	CAPC.		0			
k	W/Ton		0			
M		12				
	1					
LOOK-UP VALU	E					
E	FFHP	86.70%	86.70%			

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	. 7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2070

System Type

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	177.5	
Sub Total	0.0	1,940.1	177.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				. 3
TOTAL	0.0	1,940.1	177.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

2070

DATE:

05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

91,771

System Type

2

System Name:

H&V UNIT

System Number:

RMAU5

Typical Building Information

		. , p.oa. =	unung moonmanen		
Category		Construction	Use	Occ.	Day
	3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		15
Load Factor	0.8	
CFM - HTG	10395	
CFM - CLG	0	
% OA		100.00%
% Area		8.40%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bidg Number:

2070

System Type

2

System Name:

H&V UNIT

System Number: RMAU5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	177.5	
Sub Total	0.0	1,940.1	177.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms			•	3
TOTAL	0.0	1,940.1	177.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2070

DATE: 05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

91,771

System Type

H&V UNIT

System Name: System Number:

RMAU6

Typical Building Information

Typical Dunding Information							
Category	Construction	Use	Occ.	Day			
	3 BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI			

Enter Weeks of Summer:

20

Enter Weeks of Winter:

nter: 20

Required Operation	S	M	T	W	TH	F	<u> </u>
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	10395
CFM - CLG	0
% OA	100.00%
% Area	8.40%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2070

System Type

2

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	177.5	
Sub Total	0.0	1,940.1	177.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	177.5	3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 -

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

2070

DATE: 05-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

91,771

System Type

2 H&V UNIT

System Name: System Number:

RMAU7

Typical Building Information

Typical building information							
Category		Construction	Use	Occ.	Day		
	3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI		

Enter Weeks of Summer:

20 32

Litter Hecks of Califfic		
Enter Weeks of Winter:		32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS	四萬 计微数	INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		10395
CFM - CLG		0
% OA		100.00%
% Area		8.40%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	COST CONTROL OF ANY ANY AND ANY
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
СОАОНС	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	· 9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2070

System Type

System Name: System Number: **H&V UNIT** RMAU7

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	177.5	
Sub Total	0.0	1,940.1	177.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	177.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2070

EMC NO.: 1406-006

DATE: 05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

yne

91,771

System Type System Name:

H&V UNIT

System Number:

RMAU8

Typical Building Information

Typical Danial g								
Category Construction		Use	Occ.	Day				
3	BRICK	MNT HANGAR AVUM-HANG	0600-2200	MON-FRI				

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	Т	W	TH	FF	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT		
Motor HP		15		
Load Factor		0.8		
CFM - HTG		10395		
CFM - CLG		0		
% OA				
% Area		8.46%		
TON CAPC.		0		
MBTU CAPC.		0		
kW/Ton		0		
MOSON		12		
EFF		1		
LOOK-UP VALUE				
EFFHP	86.70%	86.70%		

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH		37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR		7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bidg Number:

2070

System Type

2

System Name: System Number: H&V UNIT RMAU8

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	178.8	
Sub Total	0.0	1,940.1	178.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	178.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2070

05-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

91,771

System Type

10 HOT WATER BOILER AND PUMPS

System Name: System Number:

В1

Typical Building Information

Typical Building Information									
Category Construction		Use	Occ.	Day					
	3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI				

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	1200	1800	1800	1800	1800	1800	1200

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		6.695
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	K (W 1 ' W 1 2 1 1 1 1 2 2 7 2 2 1 1
Cooling HRSON	2,560	3,360
Heating HRSON	4,096	5,376
C/H HRSON	6,674	8,760
Cooling HRSAV	800	
Heating HRSAV	1,280	
C/H HRSAV	2,086	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 2070

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B1

10

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	13,209.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	15,149.4	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	49.5	
Chilled Water Reset	0.0	0.0	0.0	ı
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	15,149.4	49.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

2070

05-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

91,771

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

Typical Building Information

typical Danaing								
Category Construction		Use	Occ.	Day				
	3 BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI				

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	1200	1800	1800	1800	1800	1800	1200

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		6.695
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,560	3,360
Heating HRSON	4,096	5,376
C/H HRSON	6,674	8,760
Cooling HRSAV	800	
Heating HRSAV	1,280	
C/H HRSAV	2,086	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	- 9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

2070

10

System Type System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	49.5	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	- 1100.22			
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	49.5	3

ENERGY CALCULATIONS

BUILDING 2072

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2072

DATE: 06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.: 7,811

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV1

Typical Building Information							
Category		Construction	Use	Occ.	Day		
	28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI		

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	7.5
Load Factor	0.8
CFM - HTG	13720
CFM - CLG	0
% OA	14.56%
% Area	86.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	1
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2072

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	27,509.1	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	181.2	
Sub Total	0.0	28,521.2	181.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.2	
DDC Control	0.0	0.0	34.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	·			
Run Time, and Safety Alarms				3
TOTAL	0.0	28,521.2	215.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2072

DATE:

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.: System Type

37,828

System Name:

H&V UNIT

System Number:

MAU1

Typical Building Information

Typical Ballating Intermediation							
Category	Construction	Use	Occ.	Day			
3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

		М	т	W	TH	F	S
Required Operation Start Time	0	600	600	600	600	600	0
Ston Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		8
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA	100.00%	
% Area		8.50%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2072

System Type System Name:

H&V UNIT

System Number:

MAU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,079.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	74.1	
Sub Total	0.0	1,079.5	74.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,079.5	74.1	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2072

EMC NO.: 1406-006

06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

37,828

System Type

2

System Name:

H&V UNIT

System Number:

RMAU1

Typical Building Information						
Category		Construction	Use	Occ.	Day	
	3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI	

Enter Weeks of Summer:

20

32 **Enter Weeks of Winter:**

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		9320
CFM - CLG		0
% OA		100.00%
% Area		15.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2072

System Type

2

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	•
Night Setback	0.0	0.0	133.3	
Sub Total	0.0	1,940.1	133.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	133.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2072

DATE: 06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

37,828

System Type

2

System Name: System Number: H&V UNIT RMAU2

Typical Building Information

Typroci zanang						
Category	Construction	Use	Occ.	Day		
3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI		

Enter Weeks of Summer:

20

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT				
Motor HP	Motor HP					
Load Factor		0.8				
CFM - HTG		9320				
CFM - CLG	0					
% OA		100.00%				
% Area		15.30%				
TON CAPC.		0				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		12				
EFF		1				
LOOK-UP VALUE						
EFFHP	86.70%	86.70%				

HOURS CALCULATIONS	REQUIRED HR/YR	Agon (000000000000000000000000000000000000
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2072

System Type

H&V UNIT

System Name: System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	133.3	
Sub Total	0.0	1,940.1	133.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	133.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

2072

DATE: 06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

37,828

System Type

H&V UNIT

System Name: System Number:

RMAU3

Typical Building Information

. y p.ou. = u							
Category Construction		Use	Occ.	Day			
3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI			

20 32

Enter Weeks of Summer:	20
Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		9320
CFM - CLG		0
% OA		100.00%
% Area		15.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2072

System Type

H&V UNIT

System Name: System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	133.3	
Sub Total	0.0	1,940.1	133.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	133.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

37,828

2072

Building Sq.Ft.:

System Type System Name:

System Number:

H&V UNIT

RMAU4

EMC NO.: 1406-006

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
Category Construction		Use	Occ.	Day			
	3 BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		9320
CFM - CLG		0
% OA		100.00%
% Area		15.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	AND CONTRACT OF PROPERTY OF THE PARTY.
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
НОАОНС	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2072

System Type

2 H&V UNIT

System Name: System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	133.3	
Sub Total	0.0	1,940.1	133.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	133.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2072

DATE: 06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type

37,828

System Name:

H&V UNIT

System Number:

RMAU5

Typical Building Information

Typical Ballating Information						
Category	Construction	Use	Occ.	Day		
3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		9320
CFM - CLG		0
% OA	100.00%	
% Area		15.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2072

System Type System Name: 2

System Number:

H&V UNIT RMAU5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr		
Schedule ST/SP	0.0	0.0	0.0	•		
Optimum ST/SP	0.0	1,940.1	0.0			
Duty Cycle	0.0	0.0	0.0			
Demand Limit	0.0	0.0	0.0			
Night Setback	0.0	- 0.0	133.3			
Sub Total	0.0	1,940.1	133.3			
Economizer	0.0	0.0	0.0			
Ventilation/Recirculation	0.0	0.0	0.0			
DDC Control	0.0	0.0	0.0			
HW OA Reset	0.0	0.0	0.0			
Chilled Water Reset	0.0	0.0	0.0			
Condenser Water Reset	0.0	0.0	0.0			
Chiller Demand Limit	0.0	0.0	0.0			
Remote Monitoring, Maintenance,						
Run Time, and Safety Alarms				3		
TOTAL	0.0	1,940.1	133.3	3		

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

37,828

2072

EMC NO.: 1406-006 DATE:

DATE: 06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

.

System Type

2

System Name:

H&V UNIT

System Number:

RMAU6

Typical Building Information

Typical Bullating Information							
Category		Construction	Use	Occ.	Day		
	3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	w	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS	INPUT				
Motor HP	15				
Load Factor	0.8				
CFM - HTG	9320				
CFM - CLG	0				
% OA	100.00%				
% Area	15.30%				
TON CAPC.	0				
MBTU CAPC.	0				
kW/Ton	0				
MOSON	12				
EFF	1				
LOOK-UP VALUE					
EFFHP 86.7	0% 86.70%				

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2072

System Type

2

System Name: System Number: H&V UNIT RMAU6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	133.3	
Sub Total	0.0	1,940.1	133.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		·		
Run Time, and Safety Alarms				3
TOTAL	0.0	1,940.1	133.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC

DATE:

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06-Apr-95

2072

Building Sq.Ft.:

7,811

System Type System Name:

10 HOT WATER BOILER AND PUMPS

System Number:

Typical Building Information

Typical Building information						
Category C		Construction	Use	Occ.	Day	
	28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	. 0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		4.8
kW/Ton		0
MOSON		7
EFF		0.8
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	0	1
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 2072

System Type
System Name:

10 HOT WATER BOILER AND PUMPS

System Number:

R1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	44.4	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		·	·	
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	44.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

2072

06-Apr-95 DATE:

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

7,811

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

Typical Building Information

Typical Bullating Information						
Category	Construction	Use	Occ.	Day		
2	8 BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	4.8
kW/Ton	0
MOSON	7
EFF	0.8
LOOK-UP VALUE	
EFFHP 0.009	% 0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	6999/1000000 n to 6000
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	0	1
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number: System Type

2072 10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	44.4	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	44.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

2072

BLDG:

EMC NO.: 1406-006

DATE: 06-Apr-95 PREPARED BY: CSW/BMG

PAGE 1 OF 2

CHECKED BY: KC/WLC

Building Sq.Ft.:

7,811

System Type

12

System Name:

Stop Time

BASEBOARD RADIATION

System Number:

FTR-1

Typical Building Information

Typious Dustaining interior								
Category Construction		Use	Occ.	Day				
28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI				

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

					711	-	
Required Operation	S	M	1	W	IH	Г	3
Start Time	0	0	0	0	0	0	0
Stop Time	1200	1800	1800	1800	1800	1800	1200

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	15	
Load Factor		0.8
CFM - HTG	0	
CFM - CLG		0
% OA		0.00%
% Area		14.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		0.8
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,560	3,360
Heating HRSON	4,096	5,376
C/H HRSON	6,674	8,760
Cooling HRSAV	800	
Heating HRSAV	1,280	
C/H HRSAV	2,086	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

2072

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	13,209.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	29.5	
Sub Total	0.0	15,149.4	29.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	5.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	15,149.4	35.1	3

ENERGY CALCULATIONS

BUILDING 2074

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

16,704

2074

EMC NO.: 1406-006

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name:

H&V UNIT

System Number:

HV1

Typical Building Information

Typical Ballang Information							
Category Construction		Use	Occ.	Day			
3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI			

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS	INPUT
Motor HP	12.5
Load Factor	0.8
CFM - HTG	9000
CFM - CLG	0
% OA	14.56%
% Area	37.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2074

System Type

2

System Name:

H&V UNIT

System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	,
Optimum ST/SP	0.0	1,633.7	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	142.3	
Sub Total	0.0	1,633.7	142.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		•		
Run Time, and Safety Alarms				3
TOTAL	0.0	1,633.7	142.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2074

EMC NO.: 1406-006

ATE: 06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

16,704

System Type

H&V UNIT

System Name: System Number:

HV2

	Typical Building Information					
Category		Construction	Use	Occ.	Day	
	3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT				
Motor HP	10					
Load Factor		0.8				
CFM - HTG		6300				
CFM - CLG		0				
% OA	% OA					
% Area	26.00%					
TON CAPC.		0				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		12				
EFF		1				
LOOK-UP VALUE						
EFFHP	85.80%	85.80%				

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2074

System Type

2

System Name:

H&V UNIT

System Number:

HV2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,307.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	100.0	
Sub Total	0.0	1,307.0	100.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	·			
Run Time, and Safety Alarms				3
TOTAL	0.0	1,307.0	100.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

2074

EMC NO.: 1406-006

06-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

Building Sq.Ft.:

16,704

System Type

System Name:

H&V UNIT

HV3 System Number:

Typical Building Information

	i y picai b			
Category	Construction	Use	Occ.	Day
3	BRICK	MNT HANGAR AVUM-HAN	0600-2200	MON-FRI

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

BLDG:

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

INPUTS		INPUT
Motor HP		12.5
Load Factor		0.8
CFM - HTG		9000
CFM - CLG	0	
% OA		14.56%
% Area		37.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,200
Heating HRSON	2,240	1,920
C/H HRSON	3,650	3,129
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	37.50	37.50
HOAOHC	18.70	18.70
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	0.00E+00	0.00E+00
NSC	2.30E+04	2.30E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bidg Number:

2074

System Type

2

System Name:

H&V UNIT

System Number:

HV3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	1,633.7	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	142.3	
Sub Total	0.0	1,633.7	142.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,633.7	142.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2074

TH

600

1800

2400

600

1800

2400

DATE:

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

S

600

1800

2400

0

0

2400

EMC NO.: 1406-006

Building Sq.Ft.:

16,179

System Type

H&V UNIT

System Name: System Number:

HV4

Typical Building Information

Category		Construction	Use	Occ.	Day
	28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI

Enter Weeks of Summer:

20 32

600

1800

2400

Enter Weeks of Winter:

Start Time

Stop Time

Stop Time

T W			
	Required Operation	 	 w

0

0

2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
						0.400	0400

600

1800

2400

INPUTS	INPUT
Motor HP	7.5
Load Factor	0.8
CFM - HTG	9750
CFM - CLG	0
% OA	100.00%
% Area	31.80%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 8	3.10% 83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HŘSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

System Type

2

System Name:

H&V UNIT

System Number:

HV4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	27,509.1	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	138.8	
Sub Total	0.0	28,521.2	138.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	26.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				APPER II
Run Time, and Safety Alarms				3
TOTAL	0.0	28,521.2	165.2	19 16 L 19 16 17 3 H

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

DATE:

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

16,179

2074

Building Sq.Ft.:

System Type

System Name:

H&V UNIT

System Number:

HV5

Typical Building Information

	Typical Building Information								
Category Construction		Use	Occ.	Day					
	28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG		1300
CFM - CLG		0
% OA		100.00%
% Area		42.40%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HŘSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2074

System Type

2

System Name:

H&V UNIT

System Number:

HV5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,574.7	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	185.0	
Sub Total	0.0	12,000.6	185.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	35.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,000.6	220.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY** BLDG:

LOCATION: FT. DRUM

2074

EMC NO.: 1406-006

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

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Building Sq.Ft.:

16,179

System Type

H&V UNIT

System Name: System Number:

HV6

Typical Building Information

. , , , , , , , , , , , , , , , , , , ,									
Category Construction		Use	Occ.	Day					
	8 BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT			
Motor HP	5				
Load Factor		0.8			
CFM - HTG		8200			
CFM - CLG		0			
% OA		100.00%			
% Area	26.80%				
TON CAPC.	0				
MBTU CAPC.	0				
kW/Ton					
MOSON		12			
EFF	1				
LOOK-UP VALUE					
EFFHP	81.60%	81.60%			

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2074

System Type

2

System Name:

H&V UNIT

System Number:

HV6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	18,676.5	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	117.0	
Sub Total	0.0	19,363.7	117.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	22.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	19,363.7	139.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2074

DATE:

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

16,179

Building Sq.Ft.: System Type

System Name:

H&V UNIT

System Number:

HV7

Typical Building Information

Typical Ballania intermedia							
Category	Construction	Use	Occ.	Day			
21	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	w	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT				
Motor HP	Motor HP					
Load Factor		0.8				
CFM - HTG		7100				
CFM - CLG		0				
% OA		100.00%				
% Area		23.20%				
TON CAPC.		0				
MBTU CAPC.	0					
kW/Ton		0				
MOSON		12				
EFF	1					
LOOK-UP VALUE						
EFFHP	81.60%	81.60%				

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

2

System Name:

H&V UNIT

System Number:

HV7

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	18,676.5	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	101.2	
Sub Total	0.0	19,363.7	101.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	19.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	19,363.7	120.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

2074

DATE:

06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

16,179

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

Typical Building Information

Category	Construction	Use	Occ.	Day
28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		4.8
kW/Ton		0
MOSON		7
EFF		0.8
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	0	1
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2074

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	44.4	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	44.4	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY BLDG:

LOCATION: FT. DRUM

2074

EMC NO.: 1406-006

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

16,179

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

Typical Building Information

Category	Construction	Use	Occ.	Day
28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI

Enter Weeks of Summer:

Enter Weeks of Winter:

32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	\$	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	4.8
kW/Ton	0
MOSON	7
EFF	0.8
LOOK-UP VALUE	
EFFHP 0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	0	1
CHWR	9.57	9.57
OAR		. 7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	44.4	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		·		
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	44.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

2074

DATE:

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

15,836

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

Typical Building Information

Typical Duning Medical Control of the Control of th							
Category	Construction	Use	Occ.	Day			
28	BRICK	MNT HANGAR AVUM - OP	0600-1800	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	1200	1800	1800	1800	1800	1800	1200

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		0
CFM - CLG	0	
% OA		0.00%
% Area		14.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,560	3,360
Heating HRSON	4,096	5,376
C/H HRSON	6,674	8,760
Cooling HRSAV	800	
Heating HRSAV	1,280	
C/H HRSAV	2,086	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	123.59	123.59
HOAOHC	61.63	61.63
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.14E+03	5.14E+03
NSC	2.70E+04	2.70E+04
FV	1	1
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

2074

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	13,209.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	59.8	
Sub Total	0.0	15,149.4	59.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	11.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	,
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	15,149.4	71.2	3

ENERGY CALCULATIONS

BUILDING 2792

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

2792

DATE: 07-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

7,424

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

Typical Building Information

	. , , , , , , , , _			
Category	Construction	iction Use		Day
	BRICK	MOTOR REPAIR SHOP	0600-1730	MON-FRI

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

BLDG:

Present Operations	S	M	Т	W	TH	F	S
Start Time	600	600	600	600	600	600	600
Stop Time	1800	1800	1800	1800	1800	1800	1800
Stop Time							

INPUTS		INPUT
Motor HP	1.5	
Load Factor		0.8
CFM - HTG		2500
CFM - CLG		5000
% OA	24.90%	
% Area	64.00%	
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	1,680
Heating HRSON	2,240	2,688
C/H HRSON	3,650	4,380
Cooling HRSAV	280	
Heating HRSAV	448	
C/H HRSAV	730	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	198.24	198.24
HOAOHC	121.66	121.66
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.04E+03	2.04E+03
NSC	5.85E+04	5.85E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

2792

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV1

1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	943.9	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	277.9	
Sub Total	0.0	1,186.9	277.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	9.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,186.9	287.6	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

.

2792

2400

2400

BLDG:

EMC NO.: 1406-006

DATE: 07-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

PAGE 1 OF 2

S 0

2400

2400

Building Sq.Ft.:

7,424

System Type

10

2400

System Name:

Stop Time

HOT WATER BOILER AND PUMPS

System Number:

B1

Typical Building Information

Typical Bullating Intermitation							
Category	Construction	Use	Occ.	Day			
2	BRICK	MOTOR REPAIR SHOP	0600-1730	MON-FRI			

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	
Start Time	0	0	. 0	0	0	0	
-							

2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

2400

INPUTS	INPUT
Motor HP	0
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	0.576
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 0	.00% 0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	198.24	198.24
HOAOHC	121.66	121.66
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.04E+03	2.04E+03
NSC	5.85E+04	5.85E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

2792

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	·
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	4.3	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	4.3	3

ENERGY CALCULATIONS

BUILDING 4230

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4230

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

04-Apr-95

EMC NO.: 1406-006

PAGE 1 OF 2

DATE:

Building Sq.Ft.:

System Type

10,220 7

System Name:

VAV AHU

System Number:

AH-2

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
Category	Construction	Use	Occ.	Day			
	7 BRICK	MINI MALL WITH GAS	0000-2400	SUN-SAT			

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		6.5
Load Factor		0.8
CFM - HTG		3620
CFM - CLG		3620
% OA		35.00%
% Area		25.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT	
HOAUH	0.00	0.00	
HOAUHC	0.00	0.00	
COAUC		0.00E+00	
COAUHC	0.00E+00	0.00E+00	
НОАОН	0.00	0.00	
HOAOHC	0.00	0.00	
COAOC	0.00E+00	0.00E+00	
COAOHC	0.00E+00	0.00E+00	
DC DUTY	0.00	0.00	
DC DEMAN	0.17	0.17	
ECC	1.02E-04	1.02E-04	
ECHC	3.91E-05	3.91E-05	
NSUCC	0.00E+00	0.00E+00	
NSUCHC	0.00E+00	0.00E+00	
DDCCHC	7.05E-05	7.05E-05	
DDCCC	1.84E-04	1.84E-04	
DSC	2.26E+04	2.26E+04	
NSC	0.00E+00	0.00E+00	
FV	0	0	
CHWR	9.57	9.57	
OAR	7.40	7.40	
OPT	0.00	0.00	

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bidg Number:

System Type

System Name:

VAV AHU

System Number:

AH-2

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	25,270.5	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	25,270.5	0.0	
Economizer	0.0	486.8	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	2,289.0	57.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				6
TOTAL	0.0	28,046.3	57.8	6

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

10,220

4230

EMC NO.: 1406-006

DATE: 04-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.: System Type

11

CONDENSING UNIT System Name:

System Number:

ACCU-1

Typical Building Information

Typioui Bunung mornius.						
Category	Construction	Use	Occ.	Day		
7	BRICK	MINI MALL WITH GAS	0000-2400	SUN-SAT		

Enter Weeks of Summer: Ε

20

Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	w	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS			INPUT				
Moto	0						
Load F	actor		0.8				
CFM -	CFM - HTG						
CFM -	CLG		0				
9	6 OA		0.00%				
%	Area		0.00%				
TON C	APC.		20				
MBTU C	APC.		0				
kV	V/Ton		0				
MC	SON		7				
	EFF		1				
LOOK-UP VALUE							
EF	FHP	0.00%	0.00%				

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	1.02E-04	1.02E-04
ECHC		3.91E-05
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	7.05E-05	7.05E-05
DDCCC	1.84E-04	1.84E-04
DSC	2.26E+04	2.26E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	. 7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4230

System Type

11

System Name:

CONDENSING UNIT

System Number:

ACCU-1

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	1. /. /
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	191.4	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	191.4	0.0	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10,220

4230

04-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

11

System Type System Name:

CONDENSING UNIT

System Number:

ACCU-2

Typical Building Information

Typical Building Information							
Category		Construction	Use	Occ.	Day		
	7	BRICK	MINI MALL WITH GAS	0000-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	10
MBTU CAPC.	0
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	Ī

HOAUH 0.00 0.00 HOAUHC 0.00 0.00 COAUC 0.00E+00 0.00E+00 COAUHC 0.00E+00 0.00E+00 HOAOHC 0.00E+00 0.00E+00 HOAOHC 0.00 0.00 COAOC 0.00E+00 0.00E+00 COAOC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 1.02E-04 1.02E-04 ECHC 3.91E-05 3.91E-05 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 NSC 0.00E+00 0.00E+00 NSC 0.00E+00 0.00E+00 NSC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 NSC 0.00E+00 0.00E+00 NSC 0.00E+00 0.00E+00 NSC 0.00E+00 0.00E+00	CONSTANT	LOOK-UP	INPUT
COAUC 0.00E+00 0.00E+00 COAUHC 0.00E+00 0.00E+00 HOAOH 0.00 0.00 HOAOHC 0.00E+00 0.00E+00 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 1.02E-04 1.02E-04 ECHC 3.91E-05 3.91E-05 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 NSC 0.00E+00 0.00E+00 FV 0 0	HOAUH	0.00	0.00
COAUHC 0.00E+00 0.00E+00 HOAOH 0.00 0.00 HOAOHC 0.00 0.00 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 1.02E-04 1.02E-04 ECHC 3.91E-05 3.91E-05 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 NSC 0.00E+00 0.00E+00 NSC 0.00E+00 0.00E+00 PV 0 0	HOAUHC	0.00	0.00
HOAOH 0.00 0.00 HOAOHC 0.00 0.00 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 1.02E-04 1.02E-04 ECHC 3.91E-05 3.91E-05 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 NSC 0.00E+00 0.00E+00 NSC 0.00E+00 0.00E+00 DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0	COAUC	0.00E+00	0.00E+00
HOAOHC 0.00 0.00 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 1.02E-04 1.02E-04 ECHC 3.91E-05 3.91E-05 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0	COAUHC	0.00E+00	
COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 1.02E-04 1.02E-04 ECHC 3.91E-05 3.91E-05 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0	НОАОН	0.00	
COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 1.02E-04 1.02E-04 ECHC 3.91E-05 3.91E-05 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0	HOAOHC	0.00	
DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 1.02E-04 1.02E-04 ECHC 3.91E-05 3.91E-05 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0	COAOC		
DC DEMAN 0.17 0.17 ECC 1.02E-04 1.02E-04 ECHC 3.91E-05 3.91E-05 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0	COAOHC	0.00E+00	
ECC 1.02E-04 1.02E-04 ECHC 3.91E-05 3.91E-05 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0	DC DUTY	0.00	
ECHC 3.91E-05 3.91E-05 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0	DC DEMAN	0.17	
NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0	ECC		
NSUCHC 0.00E+00 0.00E+00 DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0	ECHC		
DDCCHC 7.05E-05 7.05E-05 DDCCC 1.84E-04 1.84E-04 DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0			
DDCCC 1.84E-04 1.84E-04 DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0	NSUCHC		
DSC 2.26E+04 2.26E+04 NSC 0.00E+00 0.00E+00 FV 0 0	DDCCHC	7.05E-05	
NSC 0.00E+00 0.00E+00 FV 0 0			
FV 0 0	DSC	2.26E+04	
	NSC	0.00E+00	0.00E+00
CHWR 9.57 9.57			_
	CHWR	9.57	
	OAR		7.40
OPT 0.00 0.00	OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4230

System Type

11

System Name:

CONDENSING UNIT

System Number:

ACCU-2

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	95.7	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	95.7	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

Building Sq.Ft.: System Type

10,220

4230

System Name:

10 HOT WATER BOILER AND PUMPS

System Number:

Typical Building Information

	Typical Bulluling information									
	Category	Construction	Use	Occ.	Day					
r	7	BRICK	MINI MALL WITH GAS	0000-2400	SUN-SAT					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		100.00%
TON CAPC.		0
MBTU CAPC.		0.94
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

[30.00000000000000000000000000000000000	REQUIRED HR/YR		
CALCULATIONS			
Cooling HRSON	1,320	3,360	
Heating HRSON	2,112		
C/H HRSON	3,441	8,760	
Cooling HRSAV	2,040		
Heating HRSAV	3,264		
C/H HRSAV	5,319		

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	1.02E-04	1.02E-04
ECHC	3.91E-05	3.91E-05
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		7.05E-05
DDCCC	1.84E-04	1.84E-04
DSC	2.26E+04	2.26E+04
NSC	0.00E+00	0.00E+00
FV	. 0	0
CHWR		9.57
OAR	7.40	7.40
OPT	0.00	0.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

DATE:

04-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4230

System Type

1

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,246.4	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	2,246.4	0.0	
Economizer	0.0	0.0	0.0	***************************************
Ventilation/Recirculation	0.0	0.0	0.0	V
DDC Control	0.0	0.0	231.3	
HW OA Reset	0.0	0.0	7.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,246.4	238.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4230

04-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

10,220

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B-2

Typical Building Information

Typious Duniang with the same of the same							
Category Construction		Use	Occ.	Day			
7	BRICK	MINI MALL WITH GAS	0000-2400	SUN-SAT			

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	w	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS			INPUT
Motor HP			0.75
Load	Factor		0.8
CFM -	HTG		0
CFM -	CLG		0
(% OA		0.00%
%	Area		100.00%
TON C	APC.		0
MBTU (CAPC.		0.94
k\	N/Ton		0
Mo	OSON		12
	EFF		1
LOOK-UP VALU	E		
E	FHP	65.00%	65.00%

	REQUIRED	
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	1.02E-04	1.02E-04
ECHC	3.91E-05	3.91E-05
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	7.05E-05	7.05E-05
DDCCC	1.84E-04	1.84E-04
DSC	2.26E+04	2.26E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	· 7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4230

System Type

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B-2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,246.4	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	2,246.4	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	***
DDC Control	0.0	0.0	231.3	
HW OA Reset	0.0	0.0	7.0	, , , , , , , , , , , , , , , , , , , ,
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,246.4	238.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10,220

4230

04-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name:

VAV AHU

System Number:

AH-1

Typical Building Information

Typiout Dunang morning							
Category	Construction	Use	Occ.	Day			
	7 BRICK	MINI MALL WITH GAS	0000-2400	SUN-SAT	-		

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	5
Load Factor	0.8
CFM - HTG	5755
CFM - CLG	5755
% OA	14.00%
% Area	75.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	and the second s
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	1.02E-04	1.02E-04
ECHC	3.91E-05	3.91E-05
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	7.05E-05	7.05E-05
DDCCC	1.84E-04	1.84E-04
DSC	2.26E+04	2.26E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4230

System Type

7

System Name:

VAV AHU

System Number:

AH-1

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	19,438.9	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	19,438.9	0.0	
Economizer	0.0	773.8	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	3,639.0	173.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	ADDRESS S.
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				6
TOTAL	0.0	23,851.7	173.5	6

ENERGY CALCULATIONS

BUILDING 4305

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4305

05-Apr-95 DATE:

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

32,157

System Type

System Name:

10 **HOT WATER BOILER AND PUMPS**

System Number:

Typical Building Information

Typion Dunang natural							
Category	Construction	Use	Occ.	Day			
	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		1.632
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4305

System Type

10 **HOT WATER BOILER AND PUMPS**

System Name: System Number:

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	12.1	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	· · · · · · · · · · · · · · · · ·
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	The same is the same in the same supplementary that has been all the same in t	The second secon		
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	12.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

_

4305

EMC NO.: 1406-006

DATE: 05-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

32,157

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
Category	Construction	Use	Occ.	Day			
8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI			

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	2000	2000	2000	2000	2000	0
TOTOP INTO							

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	3.264
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,500	3,360
Heating HRSON	2,400	5,376
C/H HRSON	3,911	8,760
Cooling HRSAV	1,860	
Heating HRSAV	2,976	
C/H HRSAV	4,849	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC		0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
НОАОНС	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4305

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,551.6	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	4,839.1	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	24.2	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,839.1	24.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

32,157

4305

DATE: 05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

12

System Type System Name:

BASEBOARD RADIATION

System Number:

FTR-1

Typical Building Information

	Typical Dallang III									
Category Construction		Use	Occ.	Day						
	8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI					

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	2000	2000	2000	2000	2000	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		1.60%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,500	3,360
Heating HRSON	2,400	5,376
C/H HRSON	3,911	8,760
Cooling HRSAV	1,860	
Heating HRSAV	2,976	
C/H HRSAV	4,849	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	126.26	126.26
НОАОНС	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	9.76E+03	9.76E+03
NSC		5.41E+04
FV	0	0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bidg Number:

4305

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	27.8	,
Sub Total	0.0	0.0	27.8	100 March 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	5.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	32.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

32,157

4305

EMC NO.: 1406-006

05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

2

System Name:

H&V UNIT

System Number:

HV-1

Typical Building Information

	Typious Bollang								
Category Construction		Use	Occ.	Day					
	8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI				

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	2000	2000	2000	2000	2000	0

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	T	INPUT
Motor HP		65
Load Factor		8.0
CFM - HTG		38230
CFM - CLG		0
% OA		15.20%
% Area		87.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	91.70%	91.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,500	3,360
Heating HRSON	2,400	5,376
C/H HRSON	3,911	8,760
Cooling HRSAV	1,860	
Heating HRSAV	2,976	
C/H HRSAV	4,849	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	126.26	126.26
НОАОНС	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4305

System Type

System Name:

H&V UNIT

system Number:	HV-1	

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	205,030.1	0.0	
Optimum ST/SP	0.0	7,948.7	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	1,513.0	
Sub Total	0.0	212,978.9	1,513.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	273.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	212,978.9	1,786.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

32,157

4305

EMC NO.: 1406-006 05-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

2

System Type System Name:

H&V UNIT

System Number:

HV2A

Typical Building Information

Typical building information						
Category	Construction	Use	Occ.	Day		
8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	. 0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH_	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		17.5
Load Factor		0.8
CFM - HTG		13780
CFM - CLG		0
% OA		8.71%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН		126.26
НОАОНС		77.49
COAOC		0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND		0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC		9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR		9.57
OAR	L	7.40
OPT	188.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4305

System Type

2

System Name: System Number: H&V UNIT HV2A

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4305

EMC NO.: 1406-006 DATE:

05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

32,157

System Type

2 **H&V UNIT**

System Name: System Number:

HV2B

Typical Building Information

	Typrodr Danamy Information								
-	Category	Construction	Use	Occ.	Day				
	8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400		2400	2400

INPUTS		INPUT
Motor HP		6
Load Factor		0.8
CFM - HTG		10840
CFM - CLG		0
· % OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	126.26	126.26
НОАОНС	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95

PAGE 2 OF 2

Bldg Number:

4305

System Type

2 H&V UNIT

System Name: System Number:

HV2B

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

4305

EMC NO.: 1406-006 DATE:

DATE: 05-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

32,157

System Type

H&V UNIT

System Name: System Number:

HV3

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
Category	Construction	Use	Occ.	Day			
8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	2000	2000	2000	2000	2000	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	. 0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	Tar Kida		INPUT
Motor	HP		6.5
Load Fa	ctor		0.8
CFM - H	ITG		5120
CFM - C	LG		0
%	OA		26.37%
% A	rea		7.40%
TON CA	PC.		0
MBTU CA	PC.		0
kW	/Ton		0
MOS	SON		12
	FF		1
LOOK-UP VALUE			
EFF	HP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,500	3,360
Heating HRSON	2,400	5,376
C/H HRSON	3,911	8,760
Cooling HRSAV	1,860	
Heating HRSAV	2,976	
C/H HRSAV	4,849	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC		0.00E+00
НОАОН	126.26	126.26
НОАОНС		77.49
COAOC		0.00E+00
COAOHC		0.00E+00
DC DUTY	0.00	0.00
DC DEMAND		0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4305

System Type System Name:

2 **H&V UNIT**

System Number:

HV3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	23,040.8	0.0	
Optimum ST/SP	0.0	893.3	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	128.7	
Sub Total	0.0	23,934.0	128.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	23.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	The second section of the second section of the second section of the second section s			
Run Time, and Safety Alarms				3
TOTAL	0.0	23,934.0	151.9	3

ENERGY CALCULATIONS

BUILDING 4325

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

21,720

4325

DATE: 05-Apr-95 PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC PAGE 1 OF 2

Building Sq.Ft.:

System Type

12

System Name:

BASEBOARD RADIATION

System Number: HX-1

Typical Building Information

	Typical Building Information							
Category		Construction	Use	Occ.	Day			
	22	BRICK	CHILD SUPPORT CENTER	0700-1900	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	600	1900	1900	1900	1900	1900	600

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	26.00%
TON CAPC.	0
MBTU CAPC.	2.155
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 78.00%	78.00%

HOURS CALCULATIONS		PRESENT HR/YR
Cooling HRSON	1,720	3,360
Heating HRSON	2,752	5,376
C/H HRSON	4,484	8,760
Cooling HRSAV	1,640	
Heating HRSAV	2,624	
C/H HRSAV	4,276	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	91.77	91.77
HOAOHC	56.32	56.32
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.55E+04	2.55E+04
NSC	9.79E+04	9.79E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95

PAGE 2 OF 2

Bldg Number:

4325

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HX-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,013.2	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	552.8	
Sub Total	0.0	4,300.8	552.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	143.9	
HW OA Reset	0.0	0.0	15.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,300.8	712.7	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

21,720

4325

05-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV-1

Typical Building Information

	Typical Building Information						
	Category	Construction	Use	Occ.	Day	ĺ	
i	22	BRICK	CHILD SUPPORT CENTER	0700-1900	MON-FRI	ĺ	

Enter Weeks of Summer:

20 32

Fifte: Meerie et eattitiet.	L
Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1900	1900	1900	1900	1900	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	3445
CFM - CLG	0
% OA	25.30%
% Area	24.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	91.77	91.77
HOAOHC	56.32	56.32
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
. ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.55E+04	2.55E+04
NSC	9.79E+04	9.79E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4325

System Type

.._.

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV-1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	7,815.4	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	552.1	
Sub Total	0.0	8,103.0	552.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	143.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	8,103.0	695.8	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Building Sq.Ft.:

System Type

21,720

H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

HV-2

4325

BLDG:

Typical Building Information

	Typical Building information							
Category		Construction	Use	Occ.	Day			
	22	BRICK	CHILD SUPPORT CENTER	0700-1900	MON-FRI			

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M		T	W	TH	F	S
Start Time		0	700	700	700	700	700	0
Stop Time		0 1	900	1900	1900	1900	1900	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1.5
Load Factor		0.8
CFM - HTG		2400
CFM - CLG		0
% OA		100.00%
% Area		16.80%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

LOOK-UP	INPUT
0.00	0.00
0.00	0.00
0.00E+00	0.00E+00
0.00E+00	0.00E+00
91.77	91.77
56.32	56.32
0.00E+00	0.00E+00
0.00E+00	0.00E+00
0.00	0.00
0.17	0.17
0.00E+00	0.00E+00
2.55E+04	2.55E+04
9.79E+04	9.79E+04
0	0
9.57	9.57
7.40	7.40
188.00	188.00
	0.00 0.00E+00 0.00E+00 91.77 56.32 0.00E+00 0.00E+00 0.017 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 7.40

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

DATE:

PAGE 1 OF 2

05-Apr-95

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4325

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV-2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,607.0	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	386.5	
Sub Total	0.0	6,850.0	386.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	100.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	, , , , , , , , , , , , , , , , , , , ,
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	6,850.0	487.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY BLDG:

LOCATION: FT. DRUM

4325

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

HV-3 System Number:

Typical Building Information

Typical Building Information								
Category Construction		Use	Occ.	Day				
	22	BRICK	CHILD SUPPORT CENTER	0700-1900	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1900	1900	1900	1900	1900	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1.5
Load Factor		0.8
CFM - HTG		2359
CFM - CLG		0
% OA		25.30%
% Area		16.50%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	91.77	91.77
HOAOHC	56.32	56.32
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.55E+04	2.55E+04
NSC	9.79E+04	9.79E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00
L		L

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

DATE:

PAGE 1 OF 2

05-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4325

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV-3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,607.0	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	379.6	
Sub Total	0.0	6,850.0	379.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	98.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	·			
Run Time, and Safety Alarms				3_
TOTAL	0.0	6,850.0	478.4	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4325

05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

21,720

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

Typical Building Information								
Categor	7	Construction	Use	Occ.	Day			
	22	BRICK	CHILD SUPPORT CENTER	0700-1900	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1900	1900	1900	1900	1900	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	1.5
Load Factor	0.8
CFM - HTG	2359
CFM - CLG	0
% OA	25.30%
% Area	16.50%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 69	9.20% 69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	Printed to the control of the first
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	91.77	91.77
HOAOHC	56.32	56.32
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.55E+04	2.55E+04
NSC	9.79E+04	9.79E+04
F۷	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4325

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV-4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,607.0	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	379.6	
Sub Total	0.0	6,850.0	379.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	98.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	6,850.0	478.4	3

ENERGY CALCULATIONS

BUILDING 4330

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4330

DATE:

03-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

12,968

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

AHU1 System Number:

Typical Building Information

typical ballang morning							
Category	Construction	Use	Occ.	Day			
23	BRICK	CHAPEL/REL ED/CHILD C	0600-1800	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	2100	2100	2100	2100	2100	1700

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		30
Load Factor		0.8
CFM - HTG		19145
CFM - CLG		0
% OA		10.00%
% Area		82.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	90.20%	90.20%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,080	3,360
Heating HRSON	3,328	5,376
C/H HRSON	5,423	8,760
Cooling HRSAV	1,280	
Heating HRSAV	2,048	
C/H HRSAV	3,337	

CONSTANT	LOOK-UP	INPUT
HOAUH		0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	231.05	231.05
HOAOHC	115.21	115.21
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.94E+03	9.94E+03
NSC	5.70E+03	5.70E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bldg Number:

4330

System Type

3

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	40,629.4	0.0	
Optimum ST/SP	0.0	3,729.7	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	60.6	
Sub Total	0.0	44,359.1	60.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	105.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	44,359.1	166.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4330

Building Sq.Ft.: System Type

12,968 10

System Name:

HOT WATER BOILER AND PUMPS

System Number: **B1**

Typical Building Information

	Typical Dallang Information								
	Category	Construction	Use	Occ.	Day				
r	23	BRICK	CHAPEL/REL ED/CHILD C	0600-1800	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	2100	2100	2100	2100	2100	1700

Present Operations	S	M	Т	W	TH	F	S
Start Time		0	0	0	0	0	0
Stop Time		2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		4
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA	0.00%	
% Area	18.00%	
TON CAPC.		0
MBTU CAPC.		0.95
kW/Ton		0
MOSON		7
EFF		0.82
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	. 100000 /350 20000 (2000)
Cooling HRSON	2,080	2.880
Heating HRSON	3,328	4,608
C/H HRSON	5,423	7,509
Cooling HRSAV	800	<u> </u>
Heating HRSAV	1,280	
C/H HŘSAV	2,086	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	231.05	231.05
HOAOHC	115.21	115.21
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.94E+03	9.94E+03
NSC	5.70E+03	5.70E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

03-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bldg Number:

4330

System Type

1

System Name:

HOT WATER BOILER AND PUMPS

System Number:

B1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	3,865.8	0.0	
Optimum ST/SP	0.0	567.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	13.3	
Sub Total	0.0	4,433.6	13.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	23.2	
HW OA Reset	0.0	0.0	8.6	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,433.6	45.1	3

ENERGY CALCULATIONS

BUILDING 4350

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4350

DATE:

07-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

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EMC NO.: 1406-006

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

		. ,			
Category Construction		Use	Occ.	Day	
	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

BLDG:

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		7.5
Load Factor		0.8
CFM - HTG		8000
CFM - CLG		0
% OA		100.00%
% Area		17.60%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	DODGE LICENS TO MINISTER OF
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
НОАОНС	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC		0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC	-0.7	0.00E+00
DDCCC		0.00E+00
DSC		3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR		9.57
OAR		. 7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

4350

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,789.6	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	220.0	
Sub Total	0.0	12,801.7	220.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	. 0.0	0.0	
DDC Control	0.0	0.0	79.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0,0	12,801.7	299.5	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4350

07-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

13,310

System Type System Name:

H&V UNIT

System Number:

AHU2

Typical Building Information

Typious Dunasing street									
Category		Construction	Use	Occ.	Day				
	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		8
Load Factor		0.8
CFM - HTG		5265
CFM - CLG		0
% OA		25.30%
% Area		17.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	. 0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

4350

System Type

2

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/vr
Schedule ST/SP	0.0	12,575.6	0.0	
Optimum ST/SP	0.0	1,079.5	0.0	***************************************
Duty Cycle	0.0	0.0	0.0	111-7181-6
Demand Limit	0.0	0.0	0.0	Transfer of the state of the st
Night Setback	0.0	0.0	212.5	
Sub Total	0.0	13,655.2	212.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	76.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	13,655.2	289.3	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4350

DATE: 07-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name: System Number: **H&V UNIT** AHU3

13,310

2

Typical Building Information

Category	.40	Construction	Use	Occ.	Day
	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		10
Load Factor	-	0.8
CFM - HTG		4670
CFM - CLG		0
% OA		100.00%
% Area		15.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	***
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

4350

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number: System Type

2

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	15,224.8	0.0	•
Optimum ST/SP	0.0	1,307.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	187.5	
Sub Total	0.0	16,531.8	187.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	67.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	16,531.8	255.2	

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4350

W

400

2000

400

2000

TH

400

2000

BLDG: 13,310 **Building Sq.Ft.:**

System Type System Name:

H&V UNIT

System Number:

AHU4

Typical Building Information

	Typical Building Information						
i	Category	Construction	Use	Occ.	Day		
į	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT		

Enter Weeks of Summer:

Required Operation

Start Time

Stop Time

20

400

2000

М

400

2000

Enter Weeks of Winter:	32

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	11	IPUT
Motor HP		15
Load Factor		8.0
CFM - HTG		7430
CFM - CLG		0
% OA		5.00%
% Area	2	24.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	36.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR		9.57
OAR		. 7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

400

2000

400

2000

DATE:

PAGE 1 OF 2

07-Арг-95

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

4350

System Type

2

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	22,600.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	and the second s
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	300.0	
Sub Total	0.0	24,540.3	300.0	The state of the s
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	108.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	24,540.3	408.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY** BLDG:

LOCATION: FT. DRUM

4350

07-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

13,310

System Type

2

System Name:

H&V UNIT AHU5

System Number:

Typical Building Information

Typical Building Information							
Category		Construction	Use	Occ.	Day		
	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		6
Load Factor		0.8
CFM - HTG		3145
CFM - CLG		0
% OA		5.00%
% Area		10.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	. 0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

4350

System Type

2

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	9,605.1	0.0	•
Optimum ST/SP	0.0	824.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	125.0	
Sub Total	0.0	10,429.6	125.0	•
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	45.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	10,429.6	170.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4350

EMC NO.: 1406-006

07-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

13,310

Building Sq.Ft.: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

Typical Building Information

	Typiour Funding morning							
Γ	Category	Construction	Use	Occ.	Day			
ľ	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		4
Load Factor		0.8
CFM - HTG		600
CFM - CLG		0
% OA		0.00%
% Area		1.60%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,614.1	0.0	
Optimum ST/SP	0.0	567.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	20.0	
Sub Total	0.0	7,181.9	20.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	7.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	7,181.9	27.2	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

13,310

4350

DATE: 07-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

System Type

CONVERTER AND PUMPS

System Name: System Number:

HE1

Typical Building Information

Typical Danding Information							
Category		Construction	Use	Occ.	Day		
	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT		

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		7.40%
TON CAPC.		0
MBTU CAPC.		1.5064
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,055.6	0.0	***************************************
Optimum ST/SP	0.0	287.5	0.0	*******
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	92.5	
Sub Total	0.0	2,343.1	92.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	33.4	
HW OA Reset	0.0	0.0	11.1	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,343.1	137.1	3

ENERGY CALCULATIONS

BUILDING 4400

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4400

EMC NO.: 1406-006

CHECKED BY: KC/WLC

DATE: 05-Apr-95 PREPARED BY: CSW/BMG

PAGE 1 OF 2

Building Sq.Ft.:

13.712

System Type

H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

AHU1

Typical Building Information

Typical Building Information							
Category		Construction	Use	Occ.	Day		
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT		

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	. 0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	1230
CFM - CLG	0
% OA	100.00%
% Area	21.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 78	.00% 78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4400

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	8,214.2	0.0	VV 46.0
Optimum ST/SP	0.0	287.5	0.0	***************************************
Duty Cycle	0.0	0.0	0.0	· · · · ·
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	179.9	
Sub Total	0.0	8,501.7	179.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	13.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	***************************************
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	8,501.7	193.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

4400

EMC NO.: 1406-006

DATE: 05-Apr-95

PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

13,712

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-2

Typical Building Information

.ypica. zanang m							
Category	Category Construction Use						
	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	. 2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	1
Load Factor	0.8
CFM - HTG	210
CFM - CLG	0
% OA	100.00%
% Area	4.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 69	9.20% 69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4400

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,629.4	0.0	
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	34.3	
Sub Total	0.0	4,791.4	34.3	
Economizer	0.0	0.0	0.0	***************************************
Ventilation/Recirculation	0.0	0.0	0.0	- Andrews
DDC Control	0.0	0.0	2.7	
HW OA Reset	0.0	0.0	0.0	***************************************
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,791.4	36.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4400

EMC NO.: 1406-006

DATE: 04-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

13,712

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

Typical Building Information

		. , p.ou	dinama in the second		
Category		Construction	Use	Occ.	Day
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	0.2602
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 78.00°	% 78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC		4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Арг-95

PAGE 2 OF 2

Bldg Number:

4400

System Type

9

System Name:

CONVERTER AND PUMPS

System Number: HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,041.0	0.0	•
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,328.6	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	1.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,328.6	1.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

13,712

4400

CHECKED BY: KC/WLC PAGE 1 OF 2

DATE:

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

04-Apr-95

Building Sq.Ft.:

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE2

Typical Building Information

Typical Ballang information								
Category		Construction	Use	Occ.	Day			
<u> </u>	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.75
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	75.00%
TON CAPC.	0
MBTU CAPC.	0.1117
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 6	5.00% 65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HŘSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00
UF I	180.00	100.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4400

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,268.5	0.0	
Optimum ST/SP	0.0	129.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	642.4	
Sub Total	0.0	2,397.8	642.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	49.8	
HW OA Reset	0.0	0.0	0.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,397.8	693.0	

ENERGY CALCULATIONS

BUILDING 4405

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4405

0

1200

EMC NO.: 1406-006

DATE: 06-Apr-95 PREPARED BY: CSW/BMG

0

0

0

CHECKED BY: KC/WLC PAGE 1 OF 2

Building Sq.Ft.:

2,372

1300

System Type
System Name:

2 H&V UNIT

System Number:

Stop Time

AHU1

Typical Building Information

	rypical building information						
Category	Construction	Use	Occ.	Day			
24	BRICK	CHAPEL ZONE	0800-1400	SUN			

Enter Weeks of Summer: Enter Weeks of Winter: 20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	800	0	900	0	900	0	

0

1200

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	17.5	
Load Factor		0.8
CFM - HTG		3216
CFM - CLG		0
% OA	48.78%	
% Area		58.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	340	3,360
Heating HRSON	544	5,376
C/H HRSON	886	8,760
Cooling HRSAV	3,020	
Heating HRSAV	4,832	
C/H HRSAV	7,874	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	372.76	372.76
HOAOHC	185.87	185.87
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	7.01E+03	7.01E+03
NSC	2.51E+05	2.51E+05
FV	147	147
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	· 188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4405

System Type

2 **H&V UNIT**

System Name: System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	94,795.3	0.0	
Optimum ST/SP	0.0	2,263.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	345.9	
Sub Total	0.0	97,058.7	345.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	22.1	
DDC Control	0.0	0.0	9.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	97,058.7	377.7	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

7,048

4405

Building Sq.Ft.: System Type

2

System Name:

H&V UNIT

System Number:

AHU2

Typical Building Information						
Category Construction		Use	Occ.	Day		
	25	BRICK	CHAPEL OFFICE ZONE	0600-1700	SUN-FRI	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	600	600	600	600	600	600	0
Stop Time	1300	1700	1700	1700	1700	1700	0
Stop fille	.500						

BLDG:

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400
Office Time	2-100	2.00		<u> </u>			

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		2900
CFM - CLG		0
% OA		31.03%
% Area		77.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,480	3,360
Heating HRSON	2,368	5,376
C/H HRSON	3,859	8,760
Cooling HRSAV	1,880	
Heating HRSAV	3,008	
C/H HRSAV	4,901	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	347.79	347.79
НОАОНС	173.42	173.42
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.26E+04	1.26E+04
NSC	3.30E+04	3.30E+04
FV	52	52
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

06-Apr-95

DATE:

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

06-Apr-95 PAGE 2 OF 2

Date:

Bldg Number: System Type

4405

System Name:

2 **H&V UNIT**

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	50,581.4	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	178.9	
Sub Total	0.0	52,521.5	178.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	9.0	
DDC Control	0.0	0.0	68.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	52,521.5	256.3	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

4405

EMC NO.: 1406-006

DATE: 06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

7,048

System Type

10

System Name:

HOT WATER BOILER AND PUMPS

System Number:

Typical Building Information

ypical building information							
Category	Construction	Use	Occ.	Day			
25	BRICK	CHAPEL OFFICE ZONE	0600-1700	SUN-FRI			

Enter Weeks of Summer:	20
Enter Weeks of Winter:	32

Populard Operation	8	М	T	W	TH	F	S
Required Operation Start Time	0		. 0	0	0	0	0
Stop Time	1300	1800	1800	1800	1800	1800	1200

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.505
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,580	3,360
Heating HRSON	4,128	5,376
C/H HRSON	6,726	8,760
Cooling HRSAV	780	
Heating HRSAV	1,248	
C/H HRSAV	2,034	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	347.79	347.79
HOAOHC	173.42	173.42
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.26E+04	1.26E+04
NSC	3.30E+04	3.30E+04
FV	52	52
CHWR	9.57	9.57
OAF	7.40	7.40
OP1	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4405

System Type System Name:

HOT WATER BOILER AND PUMPS

System Number:

HE1

10

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	3.7	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	3.7	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

Building Sq.Ft.:

7,048

4405

System Type

12

System Name:

BASEBOARD RADIATION

System Number: FTR-1

25

Typical Building Information								
Category	.,	Construction	Use	Occ.	Day			
	25	BRICK	CHAPEL OFFICE ZONE	0600-1700	SUN-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	600	600	600	600	600	600	0
	1300	1700	1700	1700	1700	1700	0
Stop Time	1000	1700					

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area	28.50%	
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,480	3,360
Heating HRSON	2,368	5,376
C/H HRSON	3,859	8,760
Cooling HRSAV	1,880	
Heating HRSAV	3,008	
C/H HRSAV	4,901	

CONCTANT	LOOK-UP	INPUT
CONSTANT	The last live way	the state of the s
HOAUH		0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	347.79	347.79
НОАОНС	173.42	173.42
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.26E+04	1.26E+04
NSC	3.30E+04	3.30E+04
FV	52	52
CHWR	9.57	9.57
OAR		7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

DATE:

PAGE 1 OF 2

06-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 4405 12

System Type
System Name:

BASEBOARD RADIATION

System Number:

FTR-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,600.5	0.0	-
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	66.2	
Sub Total	0.0	4,888.1	66.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	25.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,888.1	91.5	3

ENERGY CALCULATIONS

BUILDING 4410

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4410

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

12,838

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

Typica: Building intermedia								
Category		Construction	Use	Occ.	Day			
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer:	20
Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		1230
CFM - CLG		0
% OA		100.00%
% Area		21.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH		0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95

PAGE 2 OF 2

Bldg Number:

4410

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	8,214.2	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	168.4	
Sub Total	0.0	8,501.7	168.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	13.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	8,501.7	181.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4410

EMC NO.: 1406-006 DATE: 05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

12,838

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-2

Typical Building Information

	.,,									
	Category	Construction	Use	Occ.	Day					
i	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	1
Load Factor	0.8
CFM - HTG	210
CFM - CLG	0
% OA	100.00%
% Area	4.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	Maria de Caralda de Caralda Maria
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4410

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,629.4	0.0	
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	***************************************
Night Setback	0.0	0.0	32.1	
Sub Total	0.0	4,791.4	32.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	2.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	4,791.4	34.6	

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4410

04-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

12,838

System Type

System Name:

CONVERTER AND PUMPS

System Number:

Typical Building Information

Typical bunding information								
Category		Construction	Use	Occ. Da	У			
<u> </u>	17	BRICK	BN HQ BLDG	0600-1700 SUN-	SAT			

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	M	Т	w	TH	F	S
Start Time	0	0	0	0	0	0	0.
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS			INPUT	
Mot	2			
Load	0.8			
CFM -	CFM - HTG			
CFM ·	CLG		0	
	% OA		0.00%	
%	Area		0.00%	
TON C	APC.		0	
MBTU (CAPC.		0.2602	
k'	W/Ton		0	
M	OSON		_ 7	
	EFF		1	
LOOK-UP VALU	E			
E	FFHP	78.00%	78.00%	

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 4410 9

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,041.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,328.6	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	1.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,328.6	1.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4410

PAGE 1 OF 2

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

DATE:

04-Apr-95

Building Sq.Ft.:

12,838 12

System Type

BASEBOARD RADIATION

System Name: System Number:

UFA

HE2

Typical Building Information

Typical Ballating information								
Category		Construction	Use	Occ.	Day			
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.75
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	75.00%
TON CAPC.	0
MBTU CAPC.	0.1117
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4410

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,268.5	0.0	
Optimum ST/SP	0.0	129.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	601.4	
Sub Total	0.0	2,397.8	601.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	. 0.0	0.0	0.0	
DDC Control	0.0	0.0	46.6	
HW OA Reset	0.0	0.0	0.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,397.8	648.9	3

ENERGY CALCULATIONS

BUILDING 4412

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4,412

DATE: 01-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

51,280

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

Typical Building Information

. 7							
Category		Construction	Use	Occ.	Day		
	14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	n i earlight	INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.5123
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HUAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	. 7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bidg Number:

4,412

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	287.5	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	3.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	287.5	3.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4,412

01-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

51,280

System Type

System Name:

BASEBOARD RADIATION

System Number:

HE-2

Typical Building Information

Category	Construction	Use	Occ.	Day
	4 BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI

Enter Weeks of Summer:

32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	0.75	
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.9801
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

[19] - 19] 10:00:00:00:00:00:00:00:00:00:00:00:00:0	REQUIRED	the first programme to the first programme
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	. 0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

4,412

System Type

System Name:

BASEBOARD RADIATION

System Number:

HE-2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	7.3	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	7.3	3.2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4412

01-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type System Name: 17,435 14

VENTILATION AHU1

System Number:

Typical Building Information

Typical building information						
Category	Construction	Use	Occ.	Day		
14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI		

Enter Weeks of Summer:

20

32 **Enter Weeks of Winter:**

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG	0	
CFM - CLG		4779
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	k (65) de dirikunda dalah keruat yan d
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	İ
C/H HRSAV	5,371]

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	220.75	220.75
HOAOHC	110.07	110.07
COAOC		0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

4412

System Type

14

System Name:

VENTILATION

System Number:

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,666.1	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,092.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	`	·		
Run Time, and Safety Alarms				3
TOTAL	0.0	5,092.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4412

DATE: 01-Apr-95

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

17,435

System Type

System Name:

14

System Number:

VENTILATION AHU2

Typical Building Information

ļ	Category Construction		Use	Occ.	Day	
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI	

Enter Weeks of Summer:

20

E

inter Weeks of Winter:	32	
	,	

Required Operation	S	M i	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG		0
CFM - CLG		4566
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	Paragraph of the control of the cont
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	. 0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

4412

System Type

14

System Name:

VENTILATION

System Number:

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/vr
Schedule ST/SP	0.0	4,666.1	- 0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,092.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance, Run Time, and Safety Alarms				3
TOTAL	0.0	5,092.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4412

DATE:

12-Apr-95 PREPARED BY: CSW/BMG

PAGE 1 OF 2

EMC NO.: 1406-006

CHECKED BY: KC/WLC

Building Sq.Ft.:

17,435

System Type 14

System Name:

VENTILATION

System Number:

AHU-3

Typical Building Information

	Typical Danaing Internation						
Category	Construction	Use	Occ.	Day			
	4 BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG		4566
CFM - CLG		0
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

12-Apr-95 PAGE 2 OF 2

Bldg Number:

4412

System Type

14

System Name:

VENTILATION

System Number:

AHU-3

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,666.1	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,092.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	5,092.0	0.0	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

17,435

4412

12-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type

14

System Name:

VENTILATION

System Number:

AHU-4

Typical Building Information

Category Construction		Use	Occ.	Day
14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI

Enter Weeks of Summer:

Elifel Meeks of Sulliller.	20
Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT				
Motor HP		3				
Load Factor	Load Factor					
CFM - HTG	CFM - HTG					
CFM - CLG	CFM - CLG					
% OA		100.00%				
% Area		0.00%				
TON CAPC.		0				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		5				
EFF		1				
LOOK-UP VALUE						
EFFHP	79.00%	79.00%				

HOURS CALCULATIONS	REQUIRED HR/YR	Professional Company of the Company
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296]
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

12-Apr-95 PAGE 2 OF 2

Bldg Number:

4412

System Type

14

System Name:

VENTILATION

System Number:

AHU-4

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,666.1	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,092.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				0
TOTAL	0.0	5,092.0	0.0	0

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

17,435

4412

TH

600

600

Building Sq.Ft.:

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

S

Typical Building Information

Typical Building Information								
Category Construct		Construction	Use	Occ.	Day			
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

Required Operation

М

Enter Weeks of Winter:	32

Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0
Stop Time		1700	1700		., 55		

BLDG:

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT				
Motor HP		0.33				
Load Factor	Load Factor					
CFM - HTG	750					
CFM - CLG	0					
% OA		100.00%				
% Area		12.75%				
TON CAPC.		0				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		12				
EFF		1				
LOOK-UP VALUE						
EFFHP	65.00%	65.00%				

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

	LOOK UD	(A)DIT
CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	. 7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

0

DATE:

PAGE 1 OF 2

02-Apr-95

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

4412

Bldg Number: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	108.1	
Sub Total	0.0	1,683.3	108.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	13.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	- Company Comp		-	
Run Time, and Safety Alarms			:	3
TOTAL	0.0	1,683.3	121.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

17,435

4412

DATE: 02-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

__

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU7

Typical Building Information

Typical Bullaning thiorination								
Category	Category Construction		Occ.	Day				
1	4 BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI				

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor	0.8	
CFM - HTG	750	
CFM - CLG	0	
% OA	100.00%	
% Area	12.75%	
TON CAPC.		0
MBTU CAPC.	0	
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	2. Sept. Graphy Str., 19 (19) 199 (19)
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

4412

System Type

4

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	108.1	
Sub Total	0.0	1,683.3	108.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	13.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	121.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4412

02-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

17,435

Building Sq.Ft.: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU8

Typical Building Information

Category C		Construction	Use	Occ.	Day
	14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		750
CFM - CLG		0
% OA		100.00%
% Area		12.75%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	39-25 Land Land 1967 1
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

4412

System Type

. . . -

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	•
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	108.1	
Sub Total	0.0	1,683.3	108.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	13.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	121.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4412

DATE:

02-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

17,435

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: AHU9

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
Category	Category Construction Use		Occ.	Day		
14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI		

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		750
CFM - CLG		0
% OA		100.00%
% Area		12.75%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

4412

Bldg Number: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	108.1	
Sub Total	0.0	1,683.3	108.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	13.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	121.1	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

33,845

4412

DATE: 02-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU10

Typical Building Information

Typical Dunding Information							
Category	Construction	Use	Occ.	Day			
1:	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	_ 0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.5
Load Factor		0.8
CFM - HTG		1860
CFM - CLG		0
% OA		100.00%
% Area		19.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bidg Number:

4412

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr			
Schedule ST/SP	0.0	0.0	0.0				
Optimum ST/SP	0.0	0.0	0.0				
Duty Cycle	0.0	0.0	0.0				
Demand Limit	0.0	0.0	0.0				
Night Setback	0.0	0.0	0.0				
Sub Total	0.0	0.0	0.0				
Economizer	0.0	0.0	0.0				
Ventilation/Recirculation	0.0	0.0	0.0				
DDC Control	0.0	0.0	79.2				
HW OA Reset	0.0	0.0	0.0				
Chilled Water Reset	0.0	0.0	0.0				
Condenser Water Reset	0.0	0.0	0.0				
Chiller Demand Limit	0.0	0.0	0.0				
Remote Monitoring, Maintenance,	-						
Run Time, and Safety Alarms							
TOTAL	0.0	0.0	79.2				

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG: 33,845

4412

Building Sq.Ft.:
System Type

. .

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: AHU11

Typical Building Information

	.) p. c						
	Category		Construction	Use	Occ.	Day	
İ		15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT	

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	Т	w	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.33
Load Factor	0.8
CFM - HTG	1350
CFM - CLG	0
% OA	100.00%
% Area	19.30%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

最高數字	CONSTANT	LOOK-UP	INPUT
	HOAUH		0.00
	HOAUHC	0.00	0.00
	COAUC	0.00E+00	0.00E+00
	COAUHC	0.00E+00	0.00E+00
	НОАОН	0.00	0.00
	HOAOHC	0.00	0.00
	COAOC	0.00E+00	0.00E+00
	COAOHC	0.00E+00	0.00E+00
	DC DUTY	0.00	0.00
	DC DEMAN	0.17	0.17
	ECC	0.00E+00	0.00E+00
	ECHC		0.00E+00
	NSUCC		0.00E+00
	NSUCHC	0.00E+00	0.00E+00
	DDCCHC	0.00E+00	0.00E+00
	DDCCC	0.00E+00	0.00E+00
	DSC	1.40E+04	1.40E+04
	NSC	0.00E+00	0.00E+00
	FV	0	0
	CHWR		9.57
	OAR	7.40	7.40
L	OPT	0.00	0.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

02-Apr-95

DATE:

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

4412

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	79.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms	3			
TOTAL	0.0	0.0	79.2	3

ENERGY CALCULATIONS

BUILDING 4414

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4,414

01-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

35,198

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HE-1

Typical Building Information

Typical Dallang Information							
Category	Construction	Use	Occ.	Day			
14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.3875
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

4,414

System Type System Name:

CONVERTER AND PUMPS

System Number:

HE-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	287.5	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	2.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	287.5	2.9	3

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

35,198

4,414

01-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE-2

Typical Building Information

· ypious wanting investment								
Category	Construction	n Use	Occ.	Day				
	14 BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

BLDG:

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.6683
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	. 0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

4,414

System Type System Name: 12 BASEBOARD RADIATION

System Number:

HE-2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	4.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	***************************************
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	4.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4414

EMC NO.: 1406-006

DATE: 02-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

0

0

PAGE 1 OF 2

Building Sq.Ft.:

8,800

System Type

Stop Time

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: AHU1

Typical Building Information

Typical Bulleting Information							
Category		Construction	Use	Occ.	Day		
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI		

0

Enter Weeks of Summer:

20 32

1700

Enter Weeks of Winter:

 Required Operation
 S
 M
 T
 W
 TH
 F
 S

 Start Time
 0
 600
 600
 600
 600
 600
 600

1700

1700

1700

1700

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.33
Load Factor	0.8
CFM - HTG	770
CFM - CLG	0
% OA	100.00%
% Area	17.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

4414

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	72.8	
Sub Total	0.0	1,683.3	72.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control ,	0.0	0.0	8.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	130
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	····	174.00.00		
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	81.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4414

EMC NO.: 1406-006

DATE:

02-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

8,800

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU2

Typical Building Information

Typical Dallang Intermedia							
Category	Construction	Use	Occ.	Day			
14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20 32

	_						
Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Ston Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		770
CFM - CLG		0
% OA		100.00%
% Area		17.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	and a control of the
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bidg Number:

4414

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	72.8	
Sub Total	0.0	1,683.3	72.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	77.
DDC Control	0.0	0.0	8.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	3811.3
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	81.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4414

EMC NO.: 1406-006

02-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

8,800

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU4

Typical Building Information

Typical Danieling							
Category	Category Construction		Occ.	Day			
14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.33
Load Factor	0.8
CFM - HTG	770
CFM - CLG	0
% OA	100.00%
% Area	17.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
НОАОНС	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 4414

System Type
System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	72.8	
Sub Total	0.0	1,683.3	72.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	8.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	81.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

Building Sq.Ft.:

26,399

4414

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

AHU5 System Number:

Typical Building Information

Typical Danting motion								
Category	Construction	Use	Occ.	Day				
	5 BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT				

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	. 0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	A 1	INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		1300
CFM - CLG		0
% OA		100.00%
% Area		16.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	00
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

01-Apr-95

DATE:

PAGE 1 OF 2

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

4414

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU5

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	62.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	62.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4414

01-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

26,399

Building Sq.Ft.: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

Typical Building Information

Typious Duning Internation						
Category	Construction	Use	Occ.	Day		
15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.33
Load Factor	0.8
CFM - HTG	1060
CFM - CLG	0
% OA	100.00%
% Area	16.70%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 65	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

4414

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	62.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				·
Run Time, and Safety Alarms				
TOTAL	0.0	0.0	62.9	

ENERGY CALCULATIONS

BUILDING 4420

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY** BLDG:

LOCATION: FT. DRUM

4420

EMC NO.: 1406-006

09-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

13,007

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

. ypiour Dunang morning								
Category		Construction	Use	Occ.	Day			
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		1230
CFM - CLG		0
% OA		100.00%
% Area		21.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRODUCT 100 100 100 100 100 100 100 100 100 10
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

09-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 4420 1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	8,214.2	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	170.6	
Sub Total	0.0	8,501.7	170.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	13.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	8,501.7	183.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4420

EMC NO.: 1406-006

09-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU2

Typical Building Information

	. , p.oa			
Category	Construction	Use	Occ.	Day
1	7 BRICK	BN HQ BLDG	0600-1700	SUN-SAT

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	Т	W	TH	F F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1
Load Factor		0.8
CFM - HTG		210
CFM - CLG		0
% OA		100.00%
% Area		4.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	-
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

09-Apr-95 PAGE 2 OF 2

4420

Bldg Number: System Type

.

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,629.4	0.0	
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	32.5	
Sub Total	0.0	4,791.4	32.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	2.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	-
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,791.4	35.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4420

04-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

13,007

System Type

CONVERTER AND PUMPS

System Name: System Number:

HE1

Typical Building Information

	Typical building information							
Category	Construction	Use	Occ.	Day				
17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	0.2602
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 4420

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,041.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	***
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	,
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,328.6	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	1.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,328.6	1.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

13,007

4420

EMC NO.: 1406-006

04-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE2

Typical Building Information

Typical = 1 many many many many many many many many								
Category	Construction	Use	Occ.	Day				
1	7 BRICK	BN HQ BLDG	0600-1700	SUN-SAT				

20 32

Enter Weeks of Summer:	20
Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.75
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	75.00%
TON CAPC.	0
MBTU CAPC.	0.1117
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP	65.00% 65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HŘSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 4420 12

System Name:

BASEBOARD RADIATION

System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,268.5	0.0	
Optimum ST/SP	0.0	129.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	609.4	
Sub Total	0.0	2,397.8	609.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	47.2	
HW OA Reset	0.0	0.0	0.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,397.8	657.4	1777 - Japan Beli 3 me

ENERGY CALCULATIONS

BUILDING 4422

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4422

07-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

34,190

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

Typical Building Information

Typical Dunaning information						
Category	Construction	Use	Occ.	Day		
1	5 BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1.5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.283
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

4422

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	2.1	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL		0.0	2.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4422

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DATE: 07-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

34,190

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV2

Typical Building Information

	Typious Dunaing internation							
-	Category	Construction	Use	Occ.	Day			
	1.5	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S .
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		1060
CFM - CLG		0
% OA		100.00%
% Area		16.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC		1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

4422

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	80.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	80.0	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4422

DATE: 07-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

<u>34,1</u>90

System Type

1 H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

HV1

Typical Building Information

	Typiour Danaing Mile Macion								
1	Category	Construction	Use	Occ.	Day				
	15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT				

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	0.33	
Load Factor		0.8
CFM - HTG		1300
CFM - CLG		0
% OA		100.00%
% Area		16.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

4422

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	80.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	80.0	11 Hillion (11 11 11 11 11 11 11 11 11 11 11 11 11

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4422

DATE: 07-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

34,190

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

Typical Building Information

.,,									
Category	Category Construction		Occ.	Day					
15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT					

Enter Weeks of Summer:

32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	Ş	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	Jista e		INPUT
Moto	2		
Load F	actor		0.8
CFM -	HTG		0
CFM -	CLG		0
9/	6 OA		0.00%
%	54.00%		
TON CA	APC.		0
MBTU C	APC.		0
kV	V/Ton		0
MC	SON		7
	1		
LOOK-UP VALUE			
EF	FHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	CONTRACTOR AND CONTRACTOR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

4422

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	258.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		·		
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	258.8	3

ENERGY CALCULATIONS

BUILDING 4430

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4430

EMC NO.: 1406-006

09-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

	Typical banding information								
Category Construction		Use	Occ.	Day					
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT				

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	1230
CFM - CLG	0
% OA	100.00%
% Area	21.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

09-Apr-95 PAGE 2 OF 2

Bldg Number:

4430

System Type

.

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	8,214.2	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	163.3	
Sub Total	0.0	8,501.7	163.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	8,501.7	176.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4430

Building Sq.Ft.: System Type

12,451

System Name:

System Number:

H&V UNIT WITHOUT RETURN FAN

AHU2

Typical Building Information

Typical Bullating information								
Category	Category Construction		Use	Occ.	Day			
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer:

20

Er

nter Weeks of Winter:	32	

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1
Load Factor		0.8
CFM - HTG		210
CFM - CLG		0
% OA		100.00%
% Area		4.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		<u> </u>
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

09-Apr-95

DATE:

PAGE 1 OF 2

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

09-Apr-95 PAGE 2 OF 2

Bldg Number:

4430

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,629.4	0.0	
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	,
Night Setback	0.0	0.0	31.1	
Sub Total	0.0	4,791.4	31.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	2.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,791.4	33.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4430

DATE: 04-Apr-95
PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

12,451

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HE1

Typical Building Information

Typical Building information							
Category	Construction	Use	Occ.	Day			
1	7 BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS			INPUT				
Mot	Motor HP						
Load	Factor		0.8				
CFM -	HTG		0				
CFM -	CLG		0				
	% OA		0.00%				
%	% Area						
TON C	APC.		0				
MBTU (CAPC.		0.2602				
k\	N/Ton		0				
Mo	OSON		7				
	EFF		1				
LOOK-UP VALU	E						
E	FFHP	78.00%	78.00%				

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number: System Type

4430

System Name:

9 **CONVERTER AND PUMPS**

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,041.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,328.6	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	1.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,328.6	1.9	3.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4430

DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

12,451 12

System Type

BASEBOARD RADIATION

System Name: System Number:

HE2

Typical Building Information

Typical building infolliation								
Category		Construction	Use	Occ.	Day			
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG	0	
CFM - CLG		0
% OA		0.00%
% Area		75.00%
TON CAPC.		0
MBTU CAPC.		0.1117
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4430

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,268.5	0.0	-
Optimum ST/SP	0.0	129.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	583.3	
Sub Total	0.0	2,397.8	583.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	45.2	
HW OA Reset	0.0	0.0	0.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,397.8	629.4	3

ENERGY CALCULATIONS

BUILDING 4432

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4432

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

35,294

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

Typical Building Information

Category Construction		Use	Occ.	Day				
15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT				

Enter Weeks of Summer:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1.5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.283
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM Date: 07-Apr-95 PAGE 2 OF 2

Bldg Number: 4432 System Type

System Name: **CONVERTER AND PUMPS**

System Number: HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	2.1	
Chilled Water Reset	0.0	0.0	0.0	·
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	2.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY** BLDG:

LOCATION: FT. DRUM

4432

EMC NO.: 1406-006

07-Арг-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

35,294

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

Typical Building Information

		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Category		Construction	Use	Occ.	Day
	15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT

Enter Weeks of Summer:

20 2

Litter Weeks of Carriller.	
Enter Weeks of Winter:	32

Start Time 0 0 0 0 0 0 Stop Time 2400 2400 2400 2400 2400 2400 2400 2500	Required Operation	S	M	T	W	TH	F	S
Stop Time 2400 2400 2400 2400 2400 2400 2	Start Time	0	0	0	0	0	0	0
0.000 1.000	Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	54.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH		0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bidg Number:

4432

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	267.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				. 3
TOTAL	0.0	0.0	267.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

35,294

4432

BLDG:

DATE: 07-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV1

	Typical B	uilding Information	
Category	Construction	Use	

	Category	Construction	Use	Occ.	Day
\vdash	15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT
_		I			

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	waller of		INPUT
Mot	or HP		0.33
Load	Factor		0.8
CFM	- HTG		1300
CFM	- CLG		0
	% OA		100.00%
%	Area		16.70%
TON C	CAPC.		0
MBTU	CAPC.		0
k	W/Ton		0
M	OSON		12
	EFF		1
LOOK-UP VALU	E		
E	FFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC		0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC		1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bidg Number:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	82.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	82.6	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4432

DATE:

07-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

35,294

Building Sq.Ft.:

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV2

Typical Building Information

Typical Ballating Intermation									
Category Construction		Use	Occ.	Day					
15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT					

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	0.33	
Load Factor		0.8
CFM - HTG		1060
CFM - CLG		0
% OA	100.00%	
% Area	16.70%	
TON CAPC.	0	
MBTU CAPC.	0	
kW/Ton		0
MOSON		12
EFF	1	
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	 AC + 150 AC + 504 M
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	. 0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

4432

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HV2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	82.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	82.6	3

ENERGY CALCULATIONS

BUILDING 4450

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4450

06-Apr-95 PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

12,730

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

Typical Bullating Internation						
Category	Construction	Use	Occ.	Day		
	16 BRICK	ENK PERS DINNING	0400-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		7.5
Load Factor		0.8
CFM - HTG		8000
CFM - CLG		0
% OA		100.00%
% Area		17.60%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	har a file of the contract of the 100
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bidg Number:

4450

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,789.6	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	174.4	
Sub Total	0.0	12,801.7	174.4	Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual Annual
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	63.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,801.7	237.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4450

EMC NO.: 1406-006

DATE: 06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

12,730

System Type

System Name:

H&V UNIT AHU2

System Number:

Typical Building Information

Typical Zamanig							
Category	Construction	Use	Occ.	Day			
1	6 BRICK	ENK PERS DINNING	0400-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS			INPUT	
Мо	tor HP		8	
Load	Factor		0.8	
CFM	- HTG		5265	
CFM	- CLG		0	
	% OA			
9,	6 Area		17.00%	
TON	CAPC.		0	
MBTU	CAPC.		0	
k	W/Ton		0	
M	IOSON		12	
	EFF		1	
LOOK-UP VALU	JE			
E	FFHP {	33.10%	83.10%	

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4450

System Type

2

System Name:

H&V UNIT

System Number:

AHU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	14,042.8	0.0	
Optimum ST/SP	0.0	1,079.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	203.2	
Sub Total	0.0	15,122.3	203.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	73.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	15,122.3	276.7	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4450

06-Apr-95 DATE: PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

12,730

System Type

System Name: System Number: **H&V UNIT** AHU3

Typical Building Information

Category	Construction	Use	Occ.	Day
16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		10
Load Factor		0.8
CFM - HTG		4670
CFM - CLG		0
% OA		100.00%
% Area		15.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	A
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4450

System Type System Name:

2 **H&V UNIT**

System Number:

AHU3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	17,001.1	0.0	
Optimum ST/SP	0.0	1,307.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	179.3	7.
Sub Total	0.0	18,308.0	179.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	64.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	18,308.0	244.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4450

Building Sq.Ft.: System Type

12,730

System Name:

H&V UNIT AHU4

System Number:

Typical Building Information							
Category	(Construction	Use	Occ.	Day		
3	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT		

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400
Otop Inite							

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		7430
CFM - CLG		0
% OA		5.00%
% Area		24.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

		INCHIE
250.30	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

06-Apr-95

DATE:

PAGE 1 OF 2

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4450

System Type

2

System Name:

H&V UNIT

System Number:

AHU4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	25,236.9	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	11.11.
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	286.9	
Sub Total	0.0	27,177.0	286.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	103.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	27,177.0	390.6	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4450

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

12,730

System Type

System Name: System Number: **H&V UNIT** AHU5

Typical Building Information

		. , p.o			
	Category	Construction	Use	Occ.	Day
T	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		6
Load Factor		0.8
CFM - HTG		3145
CFM - CLG		0
% OA		5.00%
% Area		10.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4450

System Type

2

System Name:

H&V UNIT

System Number:

AHU5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	10,725.7	0.0	
Optimum ST/SP	0.0	824.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	119.5	
Sub Total	0.0	11,550.2	119.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	43.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	Months and a second
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	11,550.2	162.7	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4450

DATE: 06-Apr-95 PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

12,730

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

Typical Building Information

Typical Daniella III							
Category	Construction	Use	Occ.	Day			
16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	4
Load Factor	0.8
CFM - HTG	600
CFM - CLG	0
% OA	0.00%
% Area	1.60%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 79.009	% 79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4450

System Type

4

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,614.1	0.0	
Optimum ST/SP	0.0	567.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	19.1	
Sub Total	0.0	7,181.9	19.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	6.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	7,181.9	26.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4450

06-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

System Type

12,730

System Name:

CONVERTER AND PUMPS

System Number:

HE1

Typical Building Information

	Typical Danaing information								
Category	Category Construction		Occ.	Day					
16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT					

Enter Weeks of Summer:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		7.40%
TON CAPC.		0
MBTU CAPC.		1.5064
kW/Ton		0
MOSON	7	
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4450

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	3,349.5	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	88.5	
Sub Total	0.0	3,637.0	88.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	32.0	
HW OA Reset	0.0	0.0	11.1	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	3,637.0	131.6	3

ENERGY CALCULATIONS

BUILDING 4475

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4475

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

87,687

System Type

System Name:

H&V UNIT

HV1

System Number:

	Typical Building Information					
Category		Construction	Use	Occ.	Day	
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT	

Enter Weeks of Summer:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		22.5
Load Factor		0.8
CFM - HTG		11135
CFM - CLG		0
% OA		18.00%
% Area		10.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	. 0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4475

System Type

2

System Name:

H&V UNIT

System Number:	HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	81,021.0	0.0	· · · · · · · · · · · · · · · · · · ·
Optimum ST/SP	0.0	2,863.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	81.2	
Sub Total	0.0	83,884.9	81.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	20.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	83,884.9	101.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG: 87,687

4475

Building Sq.Ft.: System Type

H&V UNIT System Name: System Number:

HV2

EMC NO.: 1406-006

06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Typical Building Information

Typical Building information							
Category	,	Construction	Use	Occ.	Day		
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT		

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	. 0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	27.5
Load Factor	0.8
CFM - HTG	11410
CFM - CLG	0
% OA	18.00%
% Area	10.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 89.40%	89.40%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN.	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

2

System Name:

H&V UNIT

System Number:

HV2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	97,585.7	0.0	
Optimum ST/SP	0.0	3,449.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	81.2	
Sub Total	0.0	101,035.1	81.2	
Economizer	0.0	0.0	0.0	The state of the s
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	20.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	101,035.1	101.9	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4475

EMC NO.: 1406-006

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

87,687

System Type

System Name:

H&V UNIT

HV3

System Number:

Typical Building Information

Category	Category Construction		Use	Occ.	Day	
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	22.5
Load Factor	0.8
CFM - HTG	6020
CFM - CLG	0
% OA	18.00%
% Area	10.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	and the second of the second of the second
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number: System Type

4475

System Name:

H&V UNIT

System Number:

HV3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	81,021.0	0.0	
Optimum ST/SP	0.0	2,863.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	81.2	
Sub Total	0.0	83,884.9	81.2	***************************************
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	20.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	83,884.9	101.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY** BLDG:

LOCATION: FT. DRUM

4475

EMC NO.: 1406-006

06-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

87,687

System Type System Name:

H&V UNIT

System Number:

HV4

Typical Building Information

Γ	Category	Construction	Use	Occ.	Day
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	-	22.5
Load Factor		0.8
CFM - HTG		4090
CFM - CLG	0	
% OA		18.00%
% Area		5.00%
TON CAPC.		0
MBTU CAPC.	1	0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
The second secon	1,320	3,360
Cooling HRSON		
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUÇ	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4475

System Type

2

System Name:

H&V UNIT

System Number:

HV4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	81,021.0	0.0	
Optimum ST/SP	0.0	2,863.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	40.6	
Sub Total	0.0	83,884.9	40.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	10.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	83,884.9	51.0	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4475

DATE: 06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

87,687

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: MAU-1

Typical Building Information

		.,,,	will divide the same of the sa		
Category		Construction	Use	Occ.	Day
	18	BRICK	VEH MNT SHOP	0,00,000	SUN-SAT

Enter Weeks of Summer:

20

32 **Enter Weeks of Winter:**

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		18150
CFM - CLG		0
% OA		100.00%
% Area		6.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF .		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
НОАОНС	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4475

System Type System Name:

1
H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	•
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	48.7	
Sub Total	0.0	56,826.3	48.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	61.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4475

DATE:

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

87,687

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-2

Typical Building Information

		,		
Category	Construction	Use	Occ.	Day
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		9200
CFM - CLG		0
% OA		100.00%
% Area		3.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95

PAGE 2 OF 2

Bldg Number:

4475

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	24.4	
Sub Total	0.0	56,826.3	24.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	6.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			3
TOTAL	0.0	56,826.3	30.6	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG: 87,687

4475

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: MAU-3

Typical Building Information

Typical Dullung Information							
Category	Construction	Use	Occ.	Day			
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Ston Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		16920
CFM - CLG		0
% OA		100.00%
% Area		6.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC		2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

06-Apr-95

DATE:

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4475

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	-
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	48.7	
Sub Total	0.0	56,826.3	48.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	61.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4475

CHECKED BY: KC/WLC PAGE 1 OF 2

DATE:

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

06-Apr-95

Building Sq.Ft.:
System Type

87,687

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-4

Typical Building Information

Category	Construction	Use	Occ.	Day
	8 BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		2000
CFM - CLG		0
% OA		100.00%
% Area		6.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4475

System Type

System Name: System Number: **H&V UNIT WITHOUT RETURN FAN** MAU-4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	48.7	1.0
Sub Total	0.0	56,826.3	48.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	56,826.3	61.2	

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4475

DATE:

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

87,687

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-5

Typical Building Information

 .,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
Category		Construction	Use	Occ.	Day	
 	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		10000
CFM - CLG		0
% OA		100.00%
% Area		3.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	Martin Co., Martin and Co., Martin Co.
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	24.4	
Sub Total	0.0	56,826.3	24.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	6.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	56,826.3	30.6	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

!

DATE: 06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

37,687

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-6

Typical Building Information

			7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			
Ca	tegory		Construction	Use	Occ.	Day
		18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

4475

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		16100
CFM - CLG		0
% OA		100.00%
% Area		5.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE	•	
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	AMA 66666 M
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	. 0	0
CHWR	9.57	9.57
OAR	7.40	7.40
· OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4475

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	•
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	40.6	
Sub Total	0.0	56,826.3	40.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	10.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	51.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4475

06-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

87,687

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-7

Typical Building Information

		1 y p. ou	, and 11.		.,	
	Category Construction		Use	Occ.	Day	
Ī	1	8 BRICK	VEH MNT SHOP	0700-1900	SUN-SAT	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor	0.8	
CFM - HTG	6840	
CFM - CLG		0
% OA		100.00%
% Area		2.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	16.2	
Sub Total	0.0	56,826.3	16.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	4.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	1
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	20.4	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4475

06-Apr-95 PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

87,687 12

System Type System Name:

BASEBOARD RADIATION

System Number:

HTP1

Typical Building Information

	. , p.ou	Januaring miretime			
Category	Construction	Use	Occ.	Day	
	18 BRICK	VEH MNT SHOP	0700-1900	SUN-SAT	

20 32

Enter Weeks of Summer:	L
Enter Weeks of Winter:	

Required Operation	S		M	Т	W	TH	F	S
Start Time		0	700	700	700	700	700	700
Stop Time		0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		24.00%
TON CAPC.		0
MBTU CAPC.		3.587
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	. Proceedings of Control Control Control
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

4475

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HTP1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	194.8	
Sub Total	0.0	12,616.7	194.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	1 10 10 10 10 10 10 10 10 10 10 10 10 10
DDC Control	0.0	0.0	49.8	
HW OA Reset	0.0	0.0	26.5	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,616.7	271.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4475

BLDG:

Building Sq.Ft.: System Type

87,687

System Name:

CONVERTER AND PUMPS

System Number:

HTP2

Typical Building Information

Typical Building information								
Category	Category Construction		Use	Occ.	Day			
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		4.62
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	AA - AA - AA AA AA AA AA AA AA AA AA AA
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH		0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC		2.36E+03
NSC		9.26E+03
FV	0	0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date: 06-Apr-95 PAGE 2 OF 2

Bldg Number:

4475

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HTP2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	12,616.7	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	34.2	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				·
Run Time, and Safety Alarms	3			
TOTAL	0.0	12,616.7	34.2	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

87,687

4475

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

06-Apr-95

EMC NO.: 1406-006

PAGE 1 OF 2

DATE:

Building Sq.Ft.:

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HTP3

Typical Building Information

Typical Danating							
Category		Construction	Use	Occ.	Day		
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT		

Enter Weeks of Summer:

20

Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

BLDG:

Present Operations	S	M	Т	W	TH	F .	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	133.19		INPUT
Motor I	I P		5
Load Fac	ctor		0.8
CFM - H	rG		0
CFM - CI	.G		0
% (DΑ		0.00%
% Ar	0.00%		
TON CAP	C.		0
MBTU CAR	PC.		4.258
kW/1	Γon		0
MOS	ON		7
Ε	FF		1
LOOK-UP VALUE			
EFFI	I P	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

4475

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HTP3

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	7.1
Sub Total	0.0	12,616.7	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	31.5	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,616.7	31.5	3

ENERGY CALCULATIONS

BUILDING 4485

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4485

Building Sq.Ft.:

37,717

System Type System Name:

H&V UNIT

System Number:

HV1

Typical Building Information

Typical Building Information							
Category	Construction	Use	Occ.	Day			
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

20

32 **Enter Weeks of Winter:**

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		22.5
Load Factor		0.8
CFM - HTG		11135
CFM - CLG		0
% OA		33.00%
% Area		10.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPLIT
HOAUH		0.00
HOAUHC		0.00
COAUC		0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR		7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

DATE:

PAGE 1 OF 2

04-Apr-95

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4485

System Type

2

System Name:

H&V UNIT

System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	81,021.0	0.0	
Optimum ST/SP	0.0	2,863.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	34.9	
Sub Total	0.0	83,884.9	34.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	8.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	The second secon
Remote Monitoring, Maintenance,		-		
Run Time, and Safety Alarms				3
TOTAL	0.0	83,884.9	43.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4485

04-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

37,717

System Type

2

System Name:

H&V UNIT

HV2

System Number:

	Typical Building Information								
	Category		Construction	Use	Occ.	Day			
	<u> </u>	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	· TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	27.5
Load Factor	0.8
CFM - HTG	11410
CFM - CLG	0
% OA	33.00%
% Area	10.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP	89.40% 89.40%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4485

System Type

2

System Name:

H&V UNIT

System Number:

HV2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	97,585.7	0.0	
Optimum ST/SP	0.0	3,449.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	78875.45.75
Night Setback	0.0	0.0	34.9	
Sub Total	0.0	101,035.1	34.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	8.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	101,035.1	43.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

37,717

4485

DATE: 04-Apr-95 PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

H&V UNIT

System Name: System Number:

HV3

Typical Building Information

	Typical Ballating Information								
Category		Construction	Use	Occ.	Day				
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

BLDG:

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	4 1 3 4 4 4	INPUT
Motor HP		22.5
Load Factor		0.8
CFM - HTG		6020
CFM - CLG		0
% OA		33.00%
% Area		10.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

TOTAL

Date:

43.8

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4485

System Type

2

System Name: System Number:

H&V UNIT HV3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	81,021.0	0.0	
Optimum ST/SP	0.0	2,863.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	34.9	
Sub Total	0.0	83,884.9	34.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	8.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	

0.0

83,884.9

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4485

05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

37,717 2

System Type System Name:

H&V UNIT

System Number:

HV4

Typical Building Information

		Typical Building Information						
- 1	Category	Construction	Use	Occ.	Day			
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	w	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	22.5
Load Factor	0.8
CFM - HTG	4090
CFM - CLG	0
% OA	100.00%
% Area	5.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4485

System Type

2

System Name:

H&V UNIT

System Number:

HV4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	81,021.0	0.0	
Optimum ST/SP	0.0	2,863.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	•
Night Setback	0.0	0.0	17.5	
Sub Total	0.0	83,884.9	17.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	4.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0 ;	0.0	
Remote Monitoring, Maintenance,		, 211		
Run Time, and Safety Alarms				3
TOTAL	0.0	83,884.9	21.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4485

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

Building Sq.Ft.: System Type

37,717

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-1

Typical Building Information

	.,,,,,,,,,	3		
Category	Construction	Use	Occ.	Day
1	B BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	C	700	700	700	700	700	700
Stop Time	C	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		18150
CFM - CLG		0
% OA	100.00%	
% Area		6.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4485

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	21.0	
Sub Total	0.0	56,826.3	21.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	5.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	26.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

4485

EMC NO.: 1406-006

05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-2

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
Category	Construction	Use	Occ.	Day			
	18 BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	9200
CFM - CLG	0
% OA	100.00%
% Area	3.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
НОАОНС	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4485

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	10.5	
Sub Total	0.0	56,826.3	10.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	2.7	***************************************
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	13.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4485

05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

37,717

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

MAU-3 System Number:

Typical Building Information

	Typical building information							
Category	Construction	Use	Occ.	Day				
	18 BRICK	VEH MNT SHOP	0700-1900	SUN-SAT				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	16920
CFM - CLG	0
% OA	100.00%
% Area	6.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.70%	86.70%

l response () . I for To Tol Tol Tol () () () () () () () () () (REQUIRED	GENERAL SERVICES
CALCULATIONS	HR/YR	HK/TK
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC		2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4485

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	V /
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	21.0	
Sub Total	0.0	56,826.3	21.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	5.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
K. Chatotal have a 4 house for a	0.0	56,826.3	26.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4485

Building Sq.Ft.: System Type

37,717

System Name:

H&V UNIT WITHOUT RETURN FAN

MAU-4 System Number:

Typical Building Information

		i ypicai L	anding intormation		
С	ategory	Construction	Use	Occ.	Day
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		20000
CFM - CLG		0
% OA		100.00%
% Area		6.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

05-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4485

System Type

.

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	21.0	
Sub Total	0.0	56,826.3	21.0	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	5.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	26.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4485

Building Sq.Ft.:

37,717

System Type

H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

MAU-5

	Typical Building Information										
Category		Construction	Use	Occ.	Day						
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT	l					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S		M	Т	W	TH	F	S
Start Time		0	700	700	700	700	700	700
Stop Time		0	1600	1600	1600	1600	1600	1600

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		10000
CFM - CLG		0
% OA		100.00%
% Area		3.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	[0000011100000topy/spec
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH		0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC		2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

05-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95

PAGE 2 OF 2

Bldg Number:

4485

System Type

.

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	•
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	10.5	
Sub Total	0.0	56,826.3	10.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	2.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	13.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4485

DATE: 05-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

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EMC NO.: 1406-006

Building Sq.Ft.:

37,717

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU6

Typical Building Information

			. , p			
	Category Construction		Use	Occ.	Day	
T		18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		16100
CFM - CLG		0
% OA		100.00%
% Area		5.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bidg Number:

4485

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	,
Night Setback	0.0	0.0	17.5	
Sub Total	0.0	56,826.3	17.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	4.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	21.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4485

05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

37,717

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-7

Typical Building Information

	Typical Danding Information						
\lceil	Category	Construction	Use	Occ.	Day		
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT		

Enter weeks of Summer:	20
Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		7.5
Load Factor		0.8
CFM - HTG		16100
CFM - CLG		0
% OA		100.00%
% Area		2.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95

PAGE 2 OF 2

Bldg Number:

4485

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	28,632.0	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	7.0	
Sub Total	0.0	29,644.0	7.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	***************************************
DDC Control	0.0	0.0	1.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	29,644.0	8.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4485

05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

37,717

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HTP1

Typical Building Information

		i ypicai E	ditaling intormation			7
Category		Construction	Use	Occ.	Day	l
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT	l

Enter Weeks of Summer:

32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	5
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	24.00%
TON CAPC.	0
MBTU CAPC.	3.587
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	F
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number: System Type

4485 12

System Name:

BASEBOARD RADIATION

System Number:

HTP1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	83.8	
Sub Total	0.0	12,616.7	83.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	21.4	
HW OA Reset	0.0	0.0	26.5	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms		•		3
TOTAL	0.0	12,616.7	131.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4485

Building Sq.Ft.:

37,717

System Type System Name:

CONVERTER AND PUMPS

System Number:

HTP2

Typical Building Information

		i ypicai 🗈	unding imormation	·	
Category		Construction	Use	Occ.	Day
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	Ţ	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		4.62
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
	1,320	3,360
Cooling HRSON	 	
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

DATE:

PAGE 1 OF 2

05-Apr-95

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4485

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HTP2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	12,616.7	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	34.2	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,616.7	34.2	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4485

05-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

37,717

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HTP2

Typical Building Information

Typical Ballang Internation									
Category		Construction	Use	Occ.	Day				
,	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		4.62
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HŘSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4485

System Type

.

System Name:

CONVERTER AND PUMPS

System Number:

HTP2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	TO THE PARTY AND ADDRESS OF THE PARTY AND ADDR
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	12,616.7	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	34.2	- Ag-2
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,616.7	34.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4485

05-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

37,717

System Type

System Name:

CONVERTER AND PUMPS

System Number: HTP3

Typical Building Information

Typiour Duntaing inversion									
Category	Construction	Use	Occ.	Day					
11	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Stop Time

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	5
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	4.258
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	and a distance and a different of the Late of
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4485

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HTP3

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	12,616.7	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	31.5	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
Run Time, and Safety Alarms TOTAL	0.0	12,616.7	31.5	3

ENERGY CALCULATIONS

BUILDING 4486

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

04-Арг-95

4486

Building Sq.Ft.: System Type

27,733

System Name:

H&V UNIT

System Number:

HV1

Typical Bulluling information							
Catego	rv	Construction	Use	Occ.	Day		
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT		

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

0			
U	U	U	U
2400	2400	2400	2400
0	3 2400) 2400 2400) 2400 2400 2400

INPUTS	30.00	INPUT					
Motor HP		22.5					
Load Factor		0.8					
CFM - HTG		11135					
CFM - CLG		0					
% OA		33.00%					
% Area		10.00%					
TON CAPC.		0					
MBTU CAPC.		0					
kW/Ton		0					
MOSON		12					
EFF		1					
LOOK-UP VALUE							
EFFHP	88.10%	88.10%					

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4486

System Type

2

System Name:

H&V UNIT

System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	81,021.0	0.0	
Optimum ST/SP	0.0	2,863.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	25.7	
Sub Total	0.0	83,884.9	25.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	6.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				;
TOTAL	0.0	83,884.9	32.2	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4486

DATE: 05-Арг-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

27,723

System Type System Name:

H&V UNIT

HV2

System Number:

Typical Building Information

	Typical building information							
	Category	Construction	Use	Occ.	Day			
Ì	1:	B BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

BLDG:

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		27.5
Load Factor		0.8
CFM - HTG		11410
CFM - CLG		. 0
% OA		20.00%
% Area		10.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	89.40%	89.40%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

4486

System Type

2

System Name:

H&V UNIT

System Number:

HV2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	97,585.7	0.0	-
Optimum ST/SP	0.0	3,449.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	25.7	
Sub Total	0.0	101,035.1	25.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	6.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	101,035.1	32.2	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4486

04-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

27,733

System Type

System Name:

H&V UNIT

HV3

System Number:

	Typical Building Information						
Category		Construction	Use	Occ.	Day		
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		22.5
Load Factor		0.8
CFM - HTG		6020
CFM - CLG		0
% OA		33.00%
% Area		10.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HŘSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

4486

System Type

2

System Name:

H&V UNIT

System Number:

HV3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	81,021.0	0.0	
Optimum ST/SP	0.0	2,863.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	25.7	
Sub Total	0.0	83,884.9	25.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	6.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	83,884.9	32.2	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4486

10-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

27,733

System Type

System Name:

H&V UNIT HV4

System Number:

Typical Building Information

Typical Building information							
Category		Construction	Use	Occ.	Day		
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT		

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	22.5
Load Factor	0.8
CFM - HTG	4090
CFM - CLG	0
% OA	100.00%
% Area	5.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

10-Apr-95 PAGE 2 OF 2

Bldg Number:

4486

System Type

2

System Name: System Number: **H&V UNIT** HV4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	81,021.0	0.0	
Optimum ST/SP	0.0	2,863.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	12.8	
Sub Total	0.0	83,884.9	12.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	83,884.9	16.1	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4486

86

Building Sq.Ft.:
System Type

27,733

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-1

Typical Building Information

		i y pioui =	rananing intermedies			
Category	Category C		Use	Occ.	Day	
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT	

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400
Otop Time							

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	18150
CFM - CLG	0
% OA	100.00%
% Area	6.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	December 1981 and the second
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

DATE:

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05-Apr-95

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4486

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	15.4	
Sub Total	0.0	56,826.3	15.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms			•	3
TOTAL	0.0	56,826.3	19.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4486

Building Sq.Ft.: System Type

27,733 1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-2

Typical Building Information							
Category		Construction	Use	Occ.	Day		
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		9200
CFM - CLG		0
% OA		100.00%
% Area		3.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70	% 86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

05-Арг-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4486

System Type

.

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	7.7	
Sub Total	0.0	56,826.3	7.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	2.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	9.7	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4486

DATE: 05-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

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EMC NO.: 1406-006

Building Sq.Ft.:

27,733

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-3

Typical Building Information

Typioal Danumg morning							
Category Construction		Use	Occ.	Day			
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	16920
CFM - CLG	0
% OA	100.00%
% Area	6.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	. 0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4486

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	15.4	
Sub Total	0.0	56,826.3	15.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	19.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4486

CHECKED BY: KC/WLC PAGE 1 OF 2

DATE:

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

05-Apr-95

Building Sq.Ft.:

27,733

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-4

	Typical Building Information				
Category	Construction	Use	Occ.	Day	
1	8 BRICK	VEH MNT SHOP	0700-1900	SUN-SAT	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		20000
CFM - CLG		0
% OA		100.00%
% Area		6.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC		2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bidg Number:

4486

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	15.4	
Sub Total	0.0	56,826.3	15.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	19.3	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4486

05-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

27,733

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-5

Typical Building Information

		· / / / · · · · · · · · · · · · · · · · · · ·				
1	Category	Category Construction		Occ.	Day	
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT	

Enter Weeks of Summer:	20
Enter Weeks of Winter:	32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		10000
CFM - CLG		0
% OA		100.00%
% Area		3.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	. 7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95

PAGE 2 OF 2

Bldg Number:

4486

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	3/8-0
Night Setback	0.0	0.0	7.7	
Sub Total	0.0	56,826.3	7.7	
Economizer	0.0	0.0	0.0	***
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	2.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	9.7	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4486

05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

27,733

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU6

Typical Building Information

77									
Category	Category Construction		Occ.	Day					
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT					

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	15
Load Factor	8.0
CFM - HTG	16100
CFM - CLG	0
% OA	100.00%
% Area	5.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.	70% 86.70%

	REQUIRED	
CALCULATIONS	HKYK	HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4486

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr	
Schedule ST/SP	0.0	54,886.2	0.0		
Optimum ST/SP	0.0	1,940.1	0.0		
Duty Cycle	0.0	0.0	0.0		
Demand Limit	0.0	0.0	0.0		
Night Setback	0.0	0.0	12.8		
Sub Total	0.0	56,826.3	12.8		
Economizer	0.0	0.0	0.0		
Ventilation/Recirculation	0.0	0.0	0.0		
DDC Control	0.0	0.0	3.3		
HW OA Reset	0.0	0.0	0.0		
Chilled Water Reset	0.0	0.0	0.0		
Condenser Water Reset	0.0	0.0	0.0		
Chiller Demand Limit	0.0	0.0	0.0		
Remote Monitoring, Maintenance,					
Run Time, and Safety Alarms				3	
TOTAL	0.0	56,826.3	16.1	3	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4486

DATE: 05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

27,733

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-7

Typical Building Information

Typical Danaing internation								
Category Construct		Construction	Use	Occ.	Day			
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

0 2

Enter Weeks of Summer:	20
Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

BLDG:

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	7.5
Load Factor	0.8
CFM - HTG	16100
CFM - CLG	0
% OA	100.00%
% Area	2.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HŘSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bidg Number:

4486

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-7

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	28,632.0	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	5.1	
Sub Total	0.0	29,644.0	5.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	1.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	29,644.0	6.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

27,733

4486

Building Sq.Ft.: System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HTP1

Typical Building Information

Typical Building information									
Category	Construction	Use	Occ.	Day					
	8 BRICK	VEH MNT SHOP	0700-1900	SUN-SAT					

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

BLDG:

Present Operations	S	M	T	W	TH	r	3
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		24.00%
TON CAPC.		0
MBTU CAPC.		3.587
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

05-Apr-95

DATE:

PAGE 1 OF 2

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4486

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HTP1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	61.6	*****
Sub Total	0.0	12,616.7	61.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	15.7	
HW OA Reset	0.0	0.0	26.5	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	12,616.7	103.9	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4486

Building Sq.Ft.:
System Type

27,733

System Name:

CONVERTER AND PUMPS

System Number:

HTP2

Typical Building Information

Typical Building information									
Category	С	onstruction	Use	Occ.	Day				
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT	İ			

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		4.62
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

05-Apr-95

DATE:

PAGE 1 OF 2

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4486

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HTP2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	12,616.7	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	34.2	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,616.7	34.2	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4486

DATE: 05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

27,733

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HTP3

Typical Building Information

	. y p.ou			
Category	Construction	Use	Occ.	Day
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		4.258
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

4486

System Type

•

System Name:

CONVERTER AND PUMPS

System Number:

HTP3

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	TO The definement
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	12,616.7	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	31.5	to the second of the second
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,616.7	31.5	3

ENERGY CALCULATIONS

BUILDING 4525

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

113,120

4525

DATE: 17-Apr-95

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

2

System Name:

H&V UNIT

System Number:

AHU1

Typical Building Information

	. , ,		.,	
Category	Construction	Use	Occ.	Day
1	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1900	1900	1900	1900	1900	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	1. 1. 1. 1	INPUT
Motor HP		5
Load Factor	4	8.0
CFM - HTG		7475
CFM - CLG		14600
% OA		31.70%
% Area		22.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bldg Number:

4525

System Type

2

System Name:

H&V UNIT

System Number:

AHU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/vr
Schedule ST/SP	0.0	18,676.5	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	***************************************
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	230.4	
Sub Total	0.0	19,363.7	230.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	58.8	- Albaria , ap
HW OA Reset	0.0	0.0	0.0	Annual Control of the
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	19,363.7	289.2	3 ,

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4525

EMC NO.: 1406-006

17-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

113,120

System Type

System Name:

H&V UNIT

AHU2 System Number:

Typical Building Information

Typica. Danaing intermedia							
Category	Construction	Use	Occ.	Day			
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1900	1900	1900	1900	1900	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		4
Load Factor		0.8
CFM - HTG		5000
CFM - CLG		9700
% OA		29.58%
% Area		14.50%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bldg Number:

4525

System Type

2

System Name:

H&V UNIT

System Number:

AHU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	15,433.0	0.0	
Optimum ST/SP	0.0	567.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	151.9	
Sub Total	0.0	16,000.8	151.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	38.8	V
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	*****
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	16,000.8	190.6	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

113,120

4525

17-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type

System Name:

H&V UNIT

System Number:

AHU3

Typical Building Information

Category	Construction	Use	Occ.	Day
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1900	1900	1900	1900	1900	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		4
Load Factor		0.8
CFM - HTG		3300
CFM - CLG		6600
% OA		7.29%
% Area		3.40%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110]

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bidg Number:

4525

System Type

2

System Name:

H&V UNIT

System Number:

AHU3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	15,433.0	0.0	
Optimum ST/SP	0.0	567.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	35.6	300
Sub Total	0.0	16,000.8	35.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	9.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	16,000.8	44.7	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

113,120

4525

DATE: 17-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: AHU4

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
Category	Construction	Use	Occ.	Day			
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1900	1900	1900	1900	1900	0

BLDG:

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		1300
CFM - CLG		2600
% OA		7.23%
% Area		0.67%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON	The state of the s	12
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bldg Number:

4525

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	7,815.4	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	7.0	THE TOTAL CO.
Sub Total	0.0	8,103.0	7.0	- Transaction
Economizer	0.0	0.0	0.0	7.70.00
Ventilation/Recirculation	0.0	0.0	0.0	77.01.00
DDC Control	0.0	0.0	1.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	T-4-4-67-17-1
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				777.727.725.1.1.1
Run Time, and Safety Alarms				3
TOTAL	0.0	8,103.0	8.8	

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4525

17-Apr-95 PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

113,120

System Type

H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

AHU5

Typical Building Information

		. , ,			
ſ	Category	Construction	Use	Occ.	Day
t	1	B BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1900	1900	1900	1900	1900	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT		
Motor HP		1.5		
Load Factor		0.8		
CFM - HTG	CFM - HTG			
CFM - CLG	-	2000		
% OA		7.23%		
% Area		0.52%		
TON CAPC.	2,024	0		
MBTU CAPC.		0		
kW/Ton		0		
MOSON		12		
EFF		1		
LOOK-UP VALUE				
EFFHP	69.20%	69.20%		

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bldg Number:

4525

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,607.0	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	5.4	
Sub Total	0.0	6,850.0	5.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	1.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	****
Remote Monitoring, Maintenance,		- Lagran		
Run Time, and Safety Alarms				3
TOTAL	0.0	6,850.0	6.8	3 3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4525

DATE: 17-Apr-95 PREPARED BY: CSW/BMG

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

113,120

System Type

110,120

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

Typical Building Information

.ypious								
Category	Construction	Use	Occ.	Day				
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT				

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1900	1900	1900	1900	1900	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	1	INPUT				
Motor HP	1.5					
Load Factor		0.8				
CFM - HTG	CFM - HTG					
CFM - CLG	1800					
% OA		7.23%				
% Area		0.40%				
TON CAPC.		0				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		12				
EFF		1				
LOOK-UP VALUE						
EFFHP	69.20%	69.20%				

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
НОАОНС	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bldg Number:

4525

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,607.0	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	4.2	, , , , , , , , , , , , , , , , , , , ,
Sub Total	0.0	6,850.0	4.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	1.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				- And the second
Run Time, and Safety Alarms				3
TOTAL	0.0	6,850.0	5.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4525

EMC NO.: 1406-006

CHECKED BY: KC/WLC

17-Apr-95 PREPARED BY: CSW/BMG

PAGE 1 OF 2

Building Sq.Ft.:

113,120

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU7

Typical Building Information

Typical Danaing information								
Category	Construction	Use	Occ.	Day				
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT				

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700		700		700	0
Stop Time	0	1900	1900	1900	1900	1900	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	1, 1, 1, 1, 1, 1	INPUT				
Motor HP	3					
Load Factor		0.8				
CFM - HTG	CFM - HTG					
CFM - CLG	3200					
% OA		13.30%				
% Area		1.35%				
TON CAPC.		0				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		12				
EFF		1				
LOOK-UP VALUE						
EFFHP	79.00%	79.00%				

HOURS	REQUIRED	
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	_
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bldg Number:

4525

System Type

.

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU7

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,574.7	0.0	•
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	14.1	
Sub Total	0.0	12,000.6	14.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.6	700-2016-2016
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	730-74-10-17-11-14-14-14-14-14-14-14-14-14-14-14-14-
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,000.6	17.7	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4525

17-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

113,120

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU1

Typical Building Information

., p									
Category Construction		Use	Occ.	Day					
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT					

Enter Weeks of Summer:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1900	1900	1900	1900	1900	0

Present Operations	S	M	T	W	H	F	S
Start Time	0	0	0	0	0	0_	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG	, , , , , , , , , , , , , , , , , , , ,	2000
CFM - CLG		2000
% OA		100.00%
% Area		5.50%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bidg Number:

4525

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr	
Schedule ST/SP	0.0	18,676.5	0.0		
Optimum ST/SP	0.0	687.1	0.0		
Duty Cycle	0.0	0.0	0.0	110 Area -	
Demand Limit	0.0	0.0	0.0		
Night Setback	0.0	0.0	57.6		
Sub Total	0.0	19,363.7	57.6	11.988	
Economizer	0.0	0.0	0.0		
Ventilation/Recirculation	0.0	0.0	0.0	· · · · · · · · · · · · · · · · · · ·	
DDC Control	0.0	0.0	14.7	W PORT COLUMN TO THE COLUMN TH	
HW OA Reset	0.0	0.0	0.0		
Chilled Water Reset	0.0	0.0	0.0	- Wales of	
Condenser Water Reset	0.0	0.0	0.0		
Chiller Demand Limit	0.0	0.0	0.0	- A-9.	
Remote Monitoring, Maintenance,	A Company of the Comp				
Run Time, and Safety Alarms				3	
TOTAL	0.0	19,363.7	72.3	3	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4525

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

113,120

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU1

Typical Building Information

Typical Danaing information									
Category	Construction	Use	Occ.	Day					
1	B BRICK	VEH MNT SHOP	0700-1900	SUN-SAT					

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	700	700	700	700	700	0
Stop Time	0	1900	1900	1900	1900	1900	0

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.5
Load Factor		0.8
CFM - HTG		1200
CFM - CLG		1200
% OA		100.00%
% Area		3.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bldg Number:

4525

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,344.6	0.0	
Optimum ST/SP	0.0	86.3	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	34.6	
Sub Total	0.0	2,430.9	34.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	8.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,430.9	43.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

4525

17-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

113,120

Building Sq.Ft.: System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

Typical Building Information

Typical Bullung Information						
Category	Category Construction		Occ.	Day		
	18 BRICK	VEH MNT SHOP	0700-1900	SUN-SAT		

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	. 0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		1.3454
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	Sili a second
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bldg Number:

4525

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	7 THE TOTAL TO SECOND STREET
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	* · · · · · · · · · · · · · · · · · · ·
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	10.0	
Chilled Water Reset	0.0	0.0	0.0	. 1911/01
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	77 - E-4
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	10.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM Building Sq.Ft.:

BLDG:

4525

113,120

System Type

System Name:

CONVERTER AND PUMPS

System Number:

Typical Building Information

.) prout Dutting through the same throu							
Category	Construction	Use	Occ.	Day			
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	11 54	INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		1.1966
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

17-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bldg Number:

4525

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	•
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	8.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	8.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4525

BLDG:

Building Sq.Ft.: System Type

113,120

System Name:

CONVERTER AND PUMPS

System Number:

HE3

Typical Building Information

Typical Building Information								
Category		Construction	Use	Occ.	Day			
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

20

Enter Weeks of Winter:	3:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	1.550	INPUT				
Motor HP	0					
Load Factor		0.8				
CFM - HTG	CFM - HTG					
CFM - CLG		0				
% OA		0.00%				
% Area		0.00%				
TON CAPC.		0				
MBTU CAPC.		0.905				
kW/Ton		0				
MOSON		7				
EFF		1				
LOOK-UP VALUE						
EFFHP	0.00%	0.00%				

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT			
HOAUH	0.00	0.00			
HOAUHC	0.00	0.00			
COAUC	0.00E+00	0.00E+00			
COAUHC	0.00E+00	0.00E+00			
HOAOH	15.77	15.77			
HOAOHC	9.68	9.68			
COAOC	0.00E+00	0.00E+00			
COAOHC	0.00E+00	0.00E+00			
DC DUTY	0.00	0.00			
DC DEMAN	0.17	0.17			
ECC	0.00E+00	0.00E+00			
ECHC	0.00E+00	0.00E+00			
NSUCC	0.00E+00	0.00E+00			
NSUCHC	0.00E+00	0.00E+00			
DDCCHC	0.00E+00	0.00E+00			
DDCCC	0.00E+00	0.00E+00			
DSC	2.36E+03	2.36E+03			
NSC	9.26E+03	9.26E+03			
FV	0	0			
CHWR	9.57	9.57			
OAR	7.40	7.40			
OPT	188.00	188.00			

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

DATE:

PAGE 1 OF 2

17-Apr-95

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bidg Number:

4525

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HE3

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	·
HW OA Reset	0.0	0.0	6.7	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	6.7	311

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4525

17-Арг-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

113,120

System Type

System Name:

CONVERTER AND PUMPS

System Number:

Typical Building Information

ſ	Category Construction		Use	Occ.	Day
ľ	18	BRICK	VEH MNT SHOP		SUN-SAT

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		1.	1.5	INPUT			
Motor H	0						
Load Fac	Load Factor						
CFM - HT	G			0			
CFM - CL	0						
% C	Α			0.00%			
% Are	a			0.00%			
TON CAP	D .			0			
MBTU CAP	C.			1.1335			
kW/T	on			0			
MOSC	ON			7			
EF	F			1			
LOOK-UP VALUE							
EFFH	IP		0.00%	0.00%			

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
НОАОНС	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

17-Apr-95 PAGE 2 OF 2

Bldg Number:

4525

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE4

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	* · · · · · · · · · · · · · · · · · · ·
Optimum ST/SP	0.0	0.0	0.0	19790-164
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	8.4	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				· · · · · · · · · · · · · · · · · · ·
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	8.4	3

ENERGY CALCULATIONS

BUILDING 4530

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

_ ___

4530

DATE: 18-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

195,670

System Type

System Name:

SINGLE ZONE AHU

System Number:

AC1

Typical Building Information

Category	Construction	Use	Occ.	Day
9	BRICK	SMA BUILDING	0730-1630	SUN-SAT

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	1.5	
Load Factor	0.8	
CFM - HTG		6000
CFM - CLG	6000	
% OA		14.67%
% Area		0.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS		PRESENT HR/YR
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688	
C/H HRSAV	4,380]

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	245.00	245.00
HOAOHC	150.00	150.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.76E+03	5.76E+03
NSC	8.07E+04	8.07E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type System Name:

SINGLE ZONE AHU

System Number:

AC1

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,663.1	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	2.6	0.0	0.0	
Night Setback	0.0	0.0	110.5	
Sub Total	2.6	5,906.2	110.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	7.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				· 3
TOTAL	2.6	5,906.2	118.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4530

BLDG:

18-Apr-95 DATE:

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

S 700

1700

1700

1700

1700

Building Sq.Ft.:

195,670

System Type System Name:

Stop Time

SINGLE ZONE AHU

1700

System Number:

AC2

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								
Category	Construction	Use	Occ.	Day				
	9 BRICK	SMA BUILDING	0730-1630	SUN-SAT				

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	
Start Time	700	700	700	700	700	700	
Start Time	700	700	700	700	700	, 00	į

1700

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

1700

INPUTS		INPUT
Motor HP	1.5	
Load Factor	0.8	
CFM - HTG		6000
CFM - CLG		6000
% OA		100.00%
% Area		2.91%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		-
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688	
C/H HRSAV	4,380	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	245.00	245.00
HOAOHC	150.00	150.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.76E+03	5.76E+03
NSC	8.07E+04	8.07E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type

4

System Name:

SINGLE ZONE AHU

System Number:

AC2

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,663.1	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	2.6	0.0	0.0	
Night Setback	0.0	0.0	459.5	
Sub Total	2.6	5,906.2	459.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	32.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	2.6	5,906.2	492.3	en Markelje en Werel 3 i.e.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4530

DATE:

18-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

195,670

System Type

System Name:

SINGLE ZONE AHU

System Number:

AC3

Typical Building Information

Category	Category Construction		Occ.	Day	
	9 BRICK	SMA BUILDING	0730-1630	SUN-SAT	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.5
Load Factor	0.8
CFM - HTG	2500
CFM - CLG	2500
% OA	36.00%
% Area	0.54%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 65.00%	65.00%

HOURS CALCULATIONS		PRESENT HR/YR
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688	
C/H HRSAV	4,380	

CONSTANT	LOOK-UP	INPUT
HUAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	245.00	245.00
HOAOHC	150.00	150.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	5.76E+03	5.76E+03
NSC	8.07E+04	8.07E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type

SINGLE ZONE AHU

System Name: System Number:

AC3

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,009.7	0.0	
Optimum ST/SP	0.0	86.3	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.9	0.0	0.0	, , , , , , , , , , , , , , , , , , , ,
Night Setback	0.0	0.0	85.3	, , , , , , , , , , , , , , , , , , , ,
Sub Total	0.9	2,095.9	85.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	6.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.9	2,095.9	91.4	3.1

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG: 195,670

4530

1700

1700

DATE: 18-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

EMC NO.: 1406-006

700

1700

1700

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Building Sq.Ft.:

1

System Type

11

1700

System Name:

Stop Time

CONDENSING UNIT

System Number:

ACC1

Typical Building Information

		,		
Category	Construction	Use	Occ.	Day
,	BRICK	SMA BUILDING	0730-1630	MON-FRI

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	700	700	700	700	700	700	

1700

1700

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		_0
% OA		0.00%
% Area		0.00%
TON CAPC.		15
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		0.8
LOOK-UP VALUE		-
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688]
C/H HRSAV	4,380	

HOAUHC 0.00 0.00 COAUC 0.00E+00 0.00E+0 COAUHC 0.00E+00 0.00E+0 HOAOHC 261.93 261.9 HOAOHC 160.74 160.74 COAOC 0.00E+00 0.00E+0 COAOHC 0.00E+00 0.00E+0 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.1 ECC 0.00E+00 0.00E+0 NSUCC 0.00E+00 0.00E+0 NSUCC 0.00E+00 0.00E+0 NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0	CONSTANT	LOOK-UP	INPUT
COAUC 0.00E+00 0.00E+0 COAUHC 0.00E+00 0.00E+0 HOAOH 261.93 261.9 HOAOHC 160.74 160.7 COAOC 0.00E+00 0.00E+0 COAOHC 0.00E+00 0.00E+0 DC DUTY 0.00 0.0 DC DEMAN 0.17 0.1 ECC 0.00E+00 0.00E+0 RSUCC 0.00E+00 0.00E+0 NSUCC 0.00E+00 0.00E+0 NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0	HOAUH	0.00	0.00
COAUHC 0.00E+00 0.00E+0 HOAOH 261.93 261.9 HOAOHC 160.74 160.7 COAOC 0.00E+00 0.00E+0 COAOHC 0.00E+00 0.00E+0 DC DUTY 0.00 0.0 DC DEMAN 0.17 0.1 ECC 0.00E+00 0.00E+0 RSUCC 0.00E+00 0.00E+0 NSUCC 0.00E+00 0.00E+0 NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0	HOAUHC	0.00	0.00
HOAOH 261.93 261.93 HOAOHC 160.74 160.74 COAOC 0.00E+00 0.00E+0 COAOHC 0.00E+00 0.00E+0 DC DUTY 0.00 0.0 DC DEMAN 0.17 0.1 ECC 0.00E+00 0.00E+0 RSUCC 0.00E+00 0.00E+0 NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0	COAUC	0.00E+00	0.00E+00
HOAOHC 160.74 160.7 COAOC 0.00E+00 0.00E+0 COAOHC 0.00E+00 0.00E+0 DC DUTY 0.00 0.0 DC DEMAN 0.17 0.1 ECC 0.00E+00 0.00E+0 ECHC 0.00E+00 0.00E+0 NSUCC 0.00E+00 0.00E+0 NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0	COAUHC	0.00E+00	0.00E+00
COAOC 0.00E+00 0.00E+0 COAOHC 0.00E+00 0.00E+0 DC DUTY 0.00 0.0 DC DEMAN 0.17 0.1 ECC 0.00E+00 0.00E+0 ECHC 0.00E+00 0.00E+0 NSUCC 0.00E+00 0.00E+0 NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DSC 5.19E+03 5.19E+0	HOAOH	261.93	261.93
COAOHC 0.00E+00 0.00E+0 DC DUTY 0.00 0.0 DC DEMAN 0.17 0.1 ECC 0.00E+00 0.00E+0 ECHC 0.00E+00 0.00E+0 NSUCC 0.00E+00 0.00E+0 NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DSC 5.19E+03 5.19E+0	HOAOHC	160.74	160.74
DC DUTY 0.00 0.00 DC DEMAN 0.17 0.10 ECC 0.00E+00 0.00E+0 ECHC 0.00E+00 0.00E+0 NSUCC 0.00E+00 0.00E+0 NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DSC 5.19E+03 5.19E+0		0.00E+00	0.00E+00
DC DEMAN 0.17 0.1 ECC 0.00E+00 0.00E+0 ECHC 0.00E+00 0.00E+0 NSUCC 0.00E+00 0.00E+0 NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DSC 5.19E+03 5.19E+0	COAOHC	0.00E+00	0.00E+00
ECC 0.00E+00 0.00E+0 ECHC 0.00E+00 0.00E+0 NSUCC 0.00E+00 0.00E+0 NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DSC 5.19E+03 5.19E+0	DC DUTY	0.00	0.00
ECHC 0.00E+00 0.00E+0 NSUCC 0.00E+00 0.00E+0 NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DSC 5.19E+03 5.19E+0	DC DEMAN	0.17	0.17
NSUCC 0.00E+00 0.00E+0 NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DSC 5.19E+03 5.19E+0	ECC	0.00E+00	0.00E+00
NSUCHC 0.00E+00 0.00E+0 DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DSC 5.19E+03 5.19E+0	ECHC	0.00E+00	0.00E+00
DDCCHC 0.00E+00 0.00E+0 DDCCC 0.00E+00 0.00E+0 DSC 5.19E+03 5.19E+0			0.00E+00
DDCCC 0.00E+00 0.00E+0 DSC 5.19E+03 5.19E+0			0.00E+00
DSC 5.19E+03 5.19E+0	DDCCHC	0.00E+00	0.00E+00
	DDCCC	0.00E+00	0.00E+00
NSC 1.59E+05 1.59E+0	DSC	5.19E+03	5.19E+03
	NSC	1.59E+05	1.59E+05
FV 0	FV		0
CHWR 9.57 9.5	CHWR	9.57	9.57
	OAR	7.40	7.40
OPT 188.00 188.0	OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530 11

System Type System Name:

CONDENSING UNIT

System Number:

ACC1

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	143.6	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	143.6	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4530

DATE:

18-Арг-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

195,670

System Type

11

System Name:

CONDENSING UNIT

System Number:

ACC2

Typical Building Information

		i y picai -	differential intermediation		
Category		Construction	Use	Occ.	Day
	9	BRICK	SMA BUILDING	0730-1630	MON-FRI

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		27.0833
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		0.8
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688	
C/H HRSAV	4,380	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	261.93	261.93
НОАОНС	160.74	160.74
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC	5.19E+03	5.19E+03
NSC	1.59E+05	1.59E+05
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type System Name:

CONDENSING UNIT

System Number:

ACC2

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	***************************************
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	259.2	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	259.2	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4530

18-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

195,670

System Type

11

System Name:

CONDENSING UNIT

System Number:

ACC3

Typical Building Information

Typical Bullang Internation								
Category		Construction	Use	Occ.	Day			
	9	BRICK	SMA BUILDING	0730-1630	MON-FRI			

Enter Weeks of Summer:

20

Enter Weeks of Winter:	32

Required Operation	S	M	T	W	IH	<u> </u>	3
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700
G10P 1							

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		6.666667
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		0.8
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688	
C/H HRSAV	4,380	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	261.93	261.93
HOAOHC	160.74	160.74
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.19E+03	5.19E+03
NSC	1.59E+05	1.59E+05
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type

11

System Name:

CONDENSING UNIT

System Number: ACC3

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	63.8	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	63.8	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

4530

DATE: 18-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

195,670

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HTP-1

Typical Building Information

Category	Construction	Use	Occ.	Dav
9	BRICK	SMA BUILDING	0730-1630	SUN-SAT

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:	32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	1700	1700	1700	1700	1700	1700	1700

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	75
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	6.00%
TON CAPC.	0
MBTU CAPC.	22.4
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 91.70%	91.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,660	3,360
Heating HRSON	4,256	5,376
C/H HRSON	6,935	8,760
Cooling HRSAV	700	
Heating HRSAV	1,120	
C/H HRSAV	1,825	

CONSTANT	LOOK-UP	INPUT
HOAU	O.00	0.00
HOAUH	0.00	0.00
COAU	0.00E+00	0.00E+00
COAUH	0.00E+00	0.00E+00
HOAO	H 245.00	245.00
HOAOH	150.00	150.00
COAO	0.00E+00	0.00E+00
COAOH	0.00E+00	0.00E+00
DC DUT	Y 0.00	0.00
DC DEMAN	0.17	0.17
EC	0.00E+00	0.00E+00
ECH	0.00E+00	0.00E+00
NSUC	0.00E+00	0.00E+00
NSUCH	C 0.00E+00	0.00E+00
DDCCH	0.00E+00	0.00E+00
DDCC	0.00E+00	0.00E+00
DS	5.76E+03	5.76E+03
NS	C 8.07E+04	8.07E+04
F	V 0	0
CHW	R 9.57	9.57
OA	R 7.40	7.40
OP	T 188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type System Name:

CONVERTER AND PUMPS

System Number:

HTP-1

9

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,639.4	0.0	
Optimum ST/SP	0.0	9,171.6	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	947.4	,
Sub Total	0.0	63,811.0	947.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	67.6	
HW OA Reset	0.0	0.0	165.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	63,811.0	1,180.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4530

EMC NO.: 1406-006 DATE:

18-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

195,670

System Type System Name:

H&V UNIT

System Number:

HV1

Typical Building Information

Category	Construction	Use	Occ.	Day
9	BRICK	SMA BUILDING	0730-1630	SUN-SAT

Enter Weeks of Summer:	20
Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	aliena Leis	INPUT		
Motor HP	Motor HP			
Load Facto	r	0.8		
CFM - HTG		23765		
CFM - CLG		47530		
% OA		19.40%		
% Area	% Area			
TON CAPC.	TON CAPC.			
MBTU CAPC		0		
kW/To	า	0		
MOSON	1	12		
EFF		1		
LOOK-UP VALUE				
EFFHP	90.	60% 90.60%		

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688	
C/H HRSAV	4,380	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	245.00	245.00
HOAOHC	150.00	150.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.76E+03	5.76E+03
NSC	8.07E+04	8.07E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

4530

System Type

2

System Name:

H&V UNIT

System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	129,764.0	0.0	
Optimum ST/SP	0.0	5,569.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	259.0	
Sub Total	0.0	135,333.8	259.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	18.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	135,333.8	277.4	3 :-

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

195,670

4530

18-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

System Type System Name:

H&V UNIT

System Number:

HV2

Typical Building Information

Category	Construction	Use	Occ.	Day
9	BRICK	SMA BUILDING	0730-1630	SUN-SAT

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	45
Load Factor	0.8
CFM - HTG	30170
CFM - CLG	59540
% OA	74.60%
% Area	8.03%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 90.60%	6 90.60%

HOURS CALCULATIONS	REQUIRED HR/YR	9000 NOVE 11 12 45 50 45 50 50 50 50 50 50 50 50 50 50 50 50 50
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688	
C/H HRSAV	4,380	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	245.00	245.00
HOAOHC	150.00	150.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.76E+03	5.76E+03
NSC	8.07E+04	8.07E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type

2

System Name:

H&V UNIT HV2

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	129,764.0	0.0	
Optimum ST/SP	0.0	5,569.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	1,268.0	***************************************
Sub Total	0.0	135,333.8	1,268.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	90.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	1 1111111111111111111111111111111111111
Remote Monitoring, Maintenance,				***********
Run Time, and Safety Alarms				3
TOTAL	0.0	135,333.8	1,358.5	3.1

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

05 070

4530

DATE: 18-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

195,670

System Type System Name:

H&V UNIT

System Number:

HV3

Typical Building Information

Typical Danaing information							
Category Construction		Use	Occ.	Day			
9	BRICK	SMA BUILDING	0730-1630	SUN-SAT			

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		INPUT			
Mot	Motor HP					
Load	Factor		0.8			
CFM ·	HTG		24090			
CFM	- CLG		48140			
	% OA					
%	% Area					
TON	APC.		0			
MBTU (CAPC.		0			
k	W/Ton		0			
M	OSON		12			
	EFF		1			
LOOK-UP VALU	E					
E	FFHP	90.60%	90.60%			

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688	
C/H HRSAV	4,380	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	245.00	245.00
HOAOHC	150.00	150.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.76E+03	5.76E+03
NSC	8.07E+04	8.07E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type

2 H&V UNIT

System Name: System Number:

HV3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	129,764.0	0.0	
Optimum ST/SP	0.0	5,569.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	459.5	
Sub Total	0.0	135,333.8	459.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	32.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	***
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	135,333.8	492.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4530

18-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

195,670

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU1

Typical Building Information

Category Construction		Use	Occ.	Day
9	BRICK	SMA BUILDING	0730-1630	SUN-SAT

Enter Weeks of Summer:

20

Enter Weeks of Winter:	32

Required Operation	S	M	T	W	IH	-	5
Start Time	700	700	700	700		700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	40
Load Factor	0.8
CFM - HTG	43380
CFM - CLG	43380
% OA	100.00%
% Area	15.78%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 90.60%	6 90.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688	
C/H HRSAV	4,380]

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	245.00	245.00
HOAOHC	150.00	150.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.76E+03	5.76E+03
NSC	8.07E+04	8.07E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95

PAGE 2 OF 2

Bidg Number: System Type 4530

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	115,345.8	0.0	
Optimum ST/SP	0.0	4,950.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	2,491.8	
Sub Total	0.0	120,296.7	2,491.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	177.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	120,296.7	2,669.6	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

195,670

4530

DATE: 18-Apr-95

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU2

Typical Building Information

Typica: Danamig							
Category	Construction	Use	Occ.	Day			
	9 BRICK	SMA BUILDING	0730-1630	SUN-SAT			

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	- 1,743/3	INPUT
Motor HP		40
Load Factor		0.8
CFM - HTG		43380
CFM - CLG		43380
% OA	100.00%	
% Area		15.78%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	90.60%	90.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688	
C/H HRSAV	4,380	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	245.00	245.00
HOAOHC	150.00	150.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC		5.76E+03
NSC	8.07E+04	8.07E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	115,345.8	0.0	
Optimum ST/SP	0.0	4,950.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	,
Night Setback	0.0	0.0	2,491.8	
Sub Total	0.0	120,296.7	2,491.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	177.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	120,296.7	2,669.6	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4530

18-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

195,670

System Type

System Name:

Stop Time

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU3

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
Category	Construction	Use	Occ.	Day	
9	BRICK	SMA BUILDING	0730-1630	SUN-SAT	

1700

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

1700

Required Operation	S	M	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Ston Time	1700	1700	1700	1700	1700	1700	1700

1700

BLDG:

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	30
Load Factor	0.8
CFM - HTG	30360
CFM - CLG	30360
% OA	100.00%
% Area	11.08%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 90.20%	90.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688	
C/H HRSAV	4,380	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	245.00	245.00
HOAOHC	150.00	150.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.76E+03	5.76E+03
NSC	8.07E+04	8.07E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	86,893.0	0.0	
Optimum ST/SP	0.0	3,729.7	0.0	
Duty Cycle	0.0	0.0	0.0	200.00
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	1,749.6	
Sub Total	0.0	90,622.6	1,749.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	****
DDC Control	0.0	0.0	124.9	1777 E
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				1747-1-1
Run Time, and Safety Alarms				3
TOTAL	0.0	90,622.6	1,874.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4530

DATE: 18-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

195,670

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU4

Typical Building Information

Category	Construction	Use	Occ.	Day
9	BRICK	SMA BUILDING	0730-1630	MON-FRI

20 32

Enter weeks	or Summer:	
Enter Weeks	of Winter:	

Required Operation	S	М	Т	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700		1700	1700	1700	1700

Present Operations	S	M	Т	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		14700
CFM - CLG		14700
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,680	1,400
Heating HRSON	2,688	2,240
C/H HRSON	4,380	3,650
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	261.93	261.93
HOAOHC	160.74	160.74
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.19E+03	5.19E+03
NSC	1.59E+05	1.59E+05
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

4530

System Type

1

System Name: System Number:

H&V UNIT WITHOUT RETURN FAN MAU4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		•		
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	0.0	m – ja kraupi da 1. 3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

4530

DATE: 18-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

195,670

System Type

•

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU5

Typical Building Information

1,7,5,000.									
Category	Construction	Use	Occ.	Day					
	9 BRICK	SMA BUILDING	0730-1630	MON-FRI					

Enter Weeks of Summer:

20 32

Enter weeks of Summer.	20
Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

Present Operations	S	М	Т	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

INPUTS		INPUT
Motor HP		1.5
Load Factor		0.8
CFM - HTG		5400
CFM - CLG		5400
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,680	1,400
Heating HRSON	2,688	2,240
C/H HRSON	4,380	3,650
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	261.93	261.93
HOAOHC	160.74	160.74
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.19E+03	5.19E+03
NSC	1.59E+05	1.59E+05
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type

1 H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

MAU5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	7857.
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		1		
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4530

700

1700

700

1700

700

1700

BLDG:

EMC NO.: 1406-006 DATE:

700

1700

18-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

195,670

Building Sq.Ft.:

System Type System Name:

Start Time

Stop Time

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU6

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								
Category		Construction	Use	Occ.	Day			
	9	BRICK	SMA BUILDING	0730-1630	MON-FRI			

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

700

1700

Required Operation	S	М	Т	W	TH

700

1700

Present Operations	S	M	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

700

1700

INPUTS		INPUT
Motor HP		40
Load Factor		0.8
CFM - HTG		40680
CFM - CLG		40680
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	90.60%	90.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,680	1,400
Heating HRSON	2,688	2,240
C/H HRSON	4,380	3,650
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	261.93	261.93
HOAOHC	160.74	160.74
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.19E+03	5.19E+03
NSC	1.59E+05	1.59E+05
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type
System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

4530

EMC NO.: 1406-006 DATE:

18-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

Building Sq.Ft.:

195,670

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU7

Typical Building Information

. yprour Duntang							
Category	Construction	Use	Occ.	Day			
9	BRICK	SMA BUILDING	0730-1630	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.5
Load Factor		0.8
CFM - HTG		1540
CFM - CLG		1540
% OA		100.00%
% Area		0.06%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,680	3,360
Heating HRSON	2,688	5,376
C/H HRSON	4,380	8,760
Cooling HRSAV	1,680	
Heating HRSAV	2,688	
C/H HRSAV	4,380	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	245.00	245.00
HOAOHC	150.00	150.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.76E+03	5.76E+03
NSC	8.07E+04	8.07E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU7

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,009.7	0.0	
Optimum ST/SP	0.0	86.3	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	9.5	
Sub Total	0.0	2,095.9	9.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,095.9	10.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

195,670

4530

18-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type

1 **H&V UNIT WITHOUT RETURN FAN**

System Name: System Number:

MAU8

Typical Building Information

. yprou unding									
Category Construction		Use	Occ.	Day					
	9 BRICK	SMA BUILDING	0730-1630	SUN-SAT					

Enter Weeks of Summer:

20

Enter Weeks of Winter:	32

Required Operation	S	М	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700
Ctop Time							

BLDG:

Present Operations	S	М	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

INPUTS		INPUT
Motor HP	20	
Load Factor		0.8
CFM - HTG		28000
CFM - CLG	28000	
% OA	100.00%	
% Area	0.00%	
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,680	1,400
Heating HRSON	2,688	2,240
C/H HRSON	4,380	3,650
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	245.00	245.00
HOAOHC	150.00	150.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.76E+03	5.76E+03
NSC	8.07E+04	8.07E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

4530

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU8

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	, , , , , , , , , , , , , , , , , , , ,
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

4530

DATE: 18-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

195,670

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU9

Typical Building Information

Category	Construction	Use	Occ.	Day
9	BRICK	SMA BUILDING	0730-1630	MON-FRI

Enter Weeks of Summer: Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

Present Operations	S	M	T	W	TH	F	S
Start Time	700	700	700	700	700	700	700
Stop Time	1700	1700	1700	1700	1700	1700	1700

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		7000
CFM - CLG		7000
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,680	1,400
Heating HRSON	2,688	2,240
C/H HRSON	4,380	3,650
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	261.93	261.93
HOAOHC	160.74	160.74
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.19E+03	5.19E+03
NSC	1.59E+05	1.59E+05
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

18-Apr-95 PAGE 2 OF 2

Bldg Number:

4530

System Type

1 H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

MAU9

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	<u> </u>
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	0.0	3: 1 than 3:

ENERGY CALCULATIONS

BUILDING 10000

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

10000

EMC NO.: 1406-006

07-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

BLDG:

System Number:

AHU-1

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
Category	Construction	Use	Occ.	Day		
10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI		

Enter Weeks of Summer:

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1
Load Factor		0.8
CFM - HTG		1125
CFM - CLG		1125
% OA		29.20%
% Area		0.83%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		0
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC		0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHO	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10000

3

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,418.6	0.0	
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	1.7	0.0	0.0	
Night Setback	0.0	0.0	39.8	
Sub Total	1.7	4,580.7	39.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.5	0.3	
DDC Control	0.0	0.0	5.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	1.7	4,581.2	45.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10000

EMC NO.: 1406-006

DATE: 07-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AHU-2

Typical Building Information

/ / production of the contract							
Cate	gory	Construction	Use	Occ.	Day		
	10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI		

Enter Weeks of Summer: Enter Weeks of Winter:

					TIL		
Required Operation	S	M	T	W	TH	F	5
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	2	
Load Factor		0.8
CFM - HTG		1340
CFM - CLG		1340
% OA	29.20%	
% Area		1.20%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
НОАОН	14.77	14.77
HOAOHC	9.07	9.07
COAOC		2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHO	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10000

3

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

0.0	7,832.1	0.0	
0.0		0.0	
0.0	287.5	0.0	
0.0	0.0	0.0	
3.1	0.0	0.0	
0.0	0.0	57.5	
3.1	8,119.6	57.5	
0.0	0.0	0.0	
0.0	0.6	0.4	
0.0	0.0	8.4	
0.0	0.0	0.0	
0.0	0.0	0.0	
0.0	0.0	0.0	
0.0	0.0	0.0	
			3
	3.1 0.0 3.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	3.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	3.1 0.0 0.0 0.0 57.5 3.1 8,119.6 57.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

10000

EMC NO.: 1406-006 07-Apr-95 DATE:

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

BLDG:

System Number:

AHU-3

Typical Building Information

	. , , ,	3		
Category	Construction	Use	Occ.	Day
10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT		
Motor HP	2			
Load Factor		0.8		
CFM - HTG		2910		
CFM - CLG		2910		
% OA				
% Area		1.80%		
TON CAPC.		0		
MBTU CAPC.		0		
kW/Ton		0		
MOSON		12		
EFF		1		
LOOK-UP VALUE				
EFFHP	78.00%	78.00%		

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
НОАОН	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND		0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
F۷	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

10000

System Type

....

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	7,851.6	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	3.1	0.0	0.0	
Night Setback	0.0	0.0	86.2	
Sub Total	3.1	8,139.1	86.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	1.3	0.8	
DDC Control	0.0	0.0	12.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms	3			
TOTAL	3.1	8,140.4	99.7	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10000

EMC NO.: 1406-006

DATE: 07-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type System Name: _____

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AHU-4

Typical Building Information

	. , , , , , , , , , , , , , , , , , , ,			
Category	Construction	Use	Occ.	Day
1	0 BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI

Enter Weeks of Summer:

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1.5
Load Factor		0.8
CFM - HTG		2575
CFM - CLG		2575
% OA		29.20%
% Area		1.90%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
НОАОНС	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHO	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	. 188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bidg Number:

10000

System Type

:

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,638.9	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	2.6	0.0	0.0	
Night Setback	0.0	0.0	91.0	
Sub Total	2.6	6,882.0	91.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	1.2	0.7	
DDC Control	0.0	0.0	13.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	2.6	6,883.2	105.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10000

EMC NO.: 1406-006

DATE: 07-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

BLDG:

System Number:

AHU-5

Typical Building Information

Category	Construction	Use	Occ.	Day
10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI

Enter Weeks of Summer:

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	<u> </u>
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		585
CFM - CLG		585
% OA		29.20%
% Area		0.35%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		11_
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bidg Number:

10000

System Type

3

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,554.7	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.6	0.0	0.0	
Night Setback	0.0	0.0	16.8	
Sub Total	0.6	1,611.6	16.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.3	0.2	
DDC Control	0.0	0.0	2.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.6	1,611.9	19.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

80,294

10000

EMC NO.: 1406-006

DATE: 07-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

BLDG:

System Number:

AHU-6

Typical Building Information

Typroxit Dullang Internation							
Category Construction		Use	Occ.	Day			
1	0 BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI			

Enter Weeks of Summer:

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.125
Load Factor		0.8
CFM - HTG		410
CFM - CLG		410
% OA	29.20%	
% Area	-	0.10%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
НОАОН	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number: System Type

10000

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	591.2	0.0	
Optimum ST/SP	0.0	21.6	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.2	0.0	0.0	
Night Setback	0.0	0.0	4.6	
Sub Total	0.2	612.8	4.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.2	0.1	
DDC Control	0.0	0.0	0.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3_
TOTAL	0.2	613.0	5.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

00 204

10000

DATE: 07-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type

stem Type

System Name: System Number: SINGLE ZONE AHU WITHOUT RETURN FAN

BLDG:

AHU-7

Typical Building Information

· / / / · · · · · · · · · · · · · · · ·							
Category	Construction	Use	Occ.	Day			
10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI			

Enter Weeks of Summer:

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	. 0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		410
CFM - CLG		410
% OA		29.20%
% Area		1.06%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC		0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
НОАОНС		9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC		0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	. 188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

10000

System Type

.

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number: AHU-7

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	3,522.0	0.0	
Optimum ST/SP	0.0	129.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	1.4	0.0	0.0	
Night Setback	0.0	0.0	50.8	
Sub Total	1.4	3,651.4	50.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.2	0.1	
DDC Control	0.0	0.0	7.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms			58.3	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

80,294

10000

EMC NO.: 1406-006

DATE: 07-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name:

Stop Time

SINGLE ZONE AHU WITHOUT RETURN FAN

BLDG:

System Number:

AHU-8

Typical Building Information

Typical ballating information					
Category	Construction	Use	Occ.	Day	
10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI	

Enter Weeks of Summer: Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	, 0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.33
Load Factor	0.8
CFM - HTG	860
CFM - CLG	860
% OA	29.20%
% Area	0.86%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP	65.00% 65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
НОАОН	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR		7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

10000

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

8-UHA

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,558.1	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.6	0.0	0.0	
Night Setback	0.0	0.0	41.2	
Sub Total	0.6	1,615.1	41.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.4	0.2	
DDC Control	0.0	0.0	6.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.6	1,615.5	47.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10000

EMC NO.: 1406-006

DATE: 07-Apr-95
PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type

3

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AHU-9

Typical Building Information

						1
	Category	Construction	Use	Occ.	Day	
	10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI	

Enter Weeks of Summer:

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400
Stop Time			L				

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		860
CFM - CLG		860
% OA		29.20%
% Area		0.56%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
HOAOHC		9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHO	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR		7.40
OPT	188.00	188.00
L		

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bidg Number:

10000

3

System Type System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,558.1	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.6	0.0	0.0	
Night Setback	0.0	0.0	26.8	
Sub Total	0.6	1,615.1	26.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.4	0.2	
DDC Control	0.0	0.0	3.9	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.6	1,615.5	31.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10000

EMC NO.: 1406-006

CHECKED BY: KC/WLC

DATE: 07-Apr-95 PREPARED BY: CSW/BMG

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type

3

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

BLDG:

System Number:

AHU-10

Typical Building Information

Typical Bullang Internation						
Category	Construction	Use	Occ.	Day		
10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI		

20 32

Enter Weeks of Summer:
Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		860
CFM - CLG		860
% OA		29.20%
% Area		0.75%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHO	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

10000

System Type

3

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number: AHU-10

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,558.1	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.6	0.0	0.0	
Night Setback	0.0	0.0	36.0	
Sub Total	0.6	1,615.1	36.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.4	0.2	
DDC Control	0.0	0.0	5.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.6	1,615.5	41.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10000

DATE: 07-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AHU-11

Typical Building Information

	. , , ,				
Category	Construction	Use	Occ.	Day	l
10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI	

Enter Weeks of Summer:

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	Т	w	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.25
Load Factor		0.8
CFM - HTG		500
CFM - CLG		500
% OA		29.20%
% Area		0.46%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
НОАОНС	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
, ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHO	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
F۷	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10000

3

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,178.5	0.0	
Optimum ST/SP	0.0	43.1	0.0	
Duty Cycle	0.0	- 0.0	0.0	
Demand Limit	0.5	0.0	0.0	
Night Setback	0.0	0.0	22.1	
Sub Total	0.5	1,221.7	22.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.2	0.1	
DDC Control	0.0	0.0	3.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.5	1,221.9	25.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10000

EMC NO.: 1406-006 07-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

AHU-12

Typical Building Information

. ур.т. 2 3								
Category Construction		Use	Occ.	Day				
10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI				

Enter Weeks of Summer:

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

	INPUTS		INPUT			
	Motor HP		0.25			
	Load Factor					
	CFM - HTG		1150			
	CFM - CLG		1150			
	% OA		29.20%			
	% Area		3.41%			
	TON CAPC.		0			
	MBTU CAPC.		0			
	kW/Ton		0			
	MOSON		12			
	EFF		1			
LOOK	-UP VALUE					
	EFFHP	65.00%	65.00%			

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
НОАОНС	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHO	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
F۷	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10000

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,186.6	0.0	
Optimum ST/SP	0.0	43.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.5	0.0	0.0	
Night Setback	0.0	0.0	163.4	
Sub Total	0.5	1,229.7	163.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.5	0.3	
DDC Control	0.0	0.0	23.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.5	1,230.2	187.5	3 (1) 3 (1)

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

80,294

10000

EMC NO.: 1406-006

DATE: 07-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

S

600

1800

1800

1800

0

0

Building Sq.Ft.:

System Type

System Name:

Start Time

Stop Time

SINGLE ZONE AHU WITHOUT RETURN FAN

BLDG:

System Number:

AHU-13

Typical Building Information

Category	Construction	Use	Occ.	Day
10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI

0

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F
Start Time	0	600	600	600	600	

1800

Present Operations	S	М	T	W	TH	F	S	
Start Time	0	0	0	0	0	0	0	
Stop Time	2400	2400	2400	2400	2400	2400	2400	

INPUTS		INPUT
Motor HP		0.25
Load Factor		0.8
CFM - HTG		1150
CFM - CLG		1150
% OA		29.20%
% Area		3.41%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
НОАОН	14.77	14.77
НОАОНС	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHO	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

07-Apr-95

PAGE 2 OF 2

Bldg Number: System Type

10000

System Name:

SINGLE ZONE AHU WITHOUT RETURN FAN

System Number:

HEATING AND COOLING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,186.6	0.0	
Optimum ST/SP	0.0	43.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.5	0.0	0.0	
Night Setback	0.0	0.0	163.4	
Sub Total	0.5	1,229.7	163.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.5	0.3	
DDC Control	0.0	0.0	23.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.5	1,230.2	187.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10000

DATE: 07-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-14

Typical Building Information

. J ploat Danting						
	Category	Construction	Use	Occ.	Day	
	10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI	

Enter Weeks of Summer:

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG		4400
CFM - CLG		0
% OA		100.00%
% Area		16.20%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10000

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,574.7	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	776.1	
Sub Total	0.0	12,000.6	776.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	113.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,000.6	889.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

80,294

10000

EMC NO.: 1406-006 07-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC PAGE 1 OF 2

BLDG:

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-15

Typical Building Information

, yp.ou							
Category	Construction	Use	Occ.	Day			
10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI			

20 32

Enter Weeks of Summer: Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	1
Load Factor	0.8
CFM - HTG	2550
CFM - CLG	0
% OA	100.00%
% Area	10.30%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	11_
LOOK-UP VALUE	
	20% 69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
НОАОН	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95

PAGE 2 OF 2

Bldg Number:

10000

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,404.6	0.0	
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	493.5	
Sub Total	0.0	4,566.7	493.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	72.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,566.7	565.5	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10000

EMC NO.: 1406-006 DATE:

07-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-16

Typical Building Information

	Typical ballating information							
ſ	Category	Construction	Use	Occ.	Day			
ŀ	10	BRICK	DIV CMD/CNTRL BUILDING	600-1800	MON-FRI			

Enter Weeks of Summer:

20

Enter Weeks of Winter:	32
	•

Required Operation	S	M	T	W	i H		
Start Time	0	600	600	600	600	600	0
	0	1800	1800	1800	1800	1800	0
Stop Time		1000	1000	L	L	L	

Present Operations	S	М	T	W	TH	FF	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.5
Load Factor	0.8	
CFM - HTG		1610
CFM - CLG		0
% OA	100.00%	
% Area	6.50%	
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF	1	
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHO	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
F۷	6	6
CHWR	9.57	9.57
OAF	7.40	7.40
OP1	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

10000

1

System Type

H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

AHU-16

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,344.6	0.0	
Optimum ST/SP	0.0	86.3	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	311.4	
Sub Total	0.0	2,430.9	311.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	45.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,430.9	356.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10000

13-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

80,294

System Type

14

System Name:

VENTILATION

System Number:

SF-1

Typical Building Information

	Typical Ballanig Internation							
Category Cons		Construction	Use	Occ.	Day			
Ì	. 10	BRICK	DIV CMD/CNTRL BUILDIN	600-1800	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	1.5	
Load Factor		0.8
CFM - HTG		0
CFM - CLG		2750
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	0.00E+00
COAUHC	8.32E-06	0.00E+00
HOAOH	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

13-Apr-95 PAGE 2 OF 2

Bldg Number:

10000

System Type System Name:

14 **VENTILATION**

System Number:

SF-1

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,534.2	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	2,777.3	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				0
TOTAL	0.0	2,777.3	0.0	0

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

10000

EMC NO.: 1406-006

13-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type

14

System Name:

VENTILATION

System Number:

SF-2

Typical Building Information

Typica: Danaing									
Category Construction		Use	Occ.	Day					
10	BRICK	DIV CMD/CNTRL BUILDIN	600-1800	MON-FRI					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1.5
Load Factor		0.8
CFM - HTG	0	
CFM - CLG	2750	
% OA	100.00%	
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	0.00E+00
COAUHC	8.32E-06	0.00E+00
HOAOH	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

13-Apr-95 PAGE 2 OF 2

Bldg Number: System Type

10000

System Name:

14 **VENTILATION**

System Number:

SF-2

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,534.2	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	2,777.3	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				0
TOTAL	0.0	2,777.3	0.0	0

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10000

13-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

80,294

System Type

14

System Name:

VENTILATION

System Number:

SF-3

Typical Building Information

	Typical Building information								
Category		Construction	Use	Occ.	Day				
	10	BRICK	DIV CMD/CNTRL BUILDIN	600-1800	MON-FRI				

Enter Weeks of Summer:

32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1.5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		2750
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	0.00E+00
COAUHC	8.32E-06	0.00E+00
НОАОН	14.77	14.77
НОАОНС	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHO		7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC		8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR		9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

13-Apr-95 PAGE 2 OF 2

Bldg Number:

10000

System Type

14

System Name:

VENTILATION

System Number:

SF-3

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,534.2	0.0	
Optimum ST/SP	0.0	243.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	2,777.3	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	•			
Run Time, and Safety Alarms				0
TOTAL	0.0	2,777.3	0.0	0

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10000

DATE: 13-Apr-95

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type

14

System Name:

VENTILATION

System Number:

SF-4

Typical Building Information

	i y piour L	randing information		
Category	Construction	Use	Occ.	Day
	10 BRICK	DIV CMD/CNTRL BUILDIN	600-1800	MON-FRI

Enter Weeks of Summer:

20

Enter Weeks of Winter: 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		4750
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	0.00E+00
COAUHC	8.32E-06	0.00E+00
HOAOH	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

13-Apr-95 PAGE 2 OF 2

Bldg Number:

10000

System Type

14

System Name:

VENTILATION

System Number:

SF-4

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,997.7	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	3,285.2	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				0
TOTAL	0.0	3,285.2	0.0	0

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

80,294

10000

13-Apr-95

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

14 **VENTILATION**

System Name: System Number:

SF-31

Typical Building Information

Typical building information								
Category	Construction	Use	Occ.	Day				
10	BRICK	DIV CMD/CNTRL BUILDIN	600-1800	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1800	1800	1800	1800	1800	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	149,53	INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		4750
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,400	3,360
Heating HRSON	2,240	5,376
C/H HRSON	3,650	8,760
Cooling HRSAV	1,960	
Heating HRSAV	3,136	
C/H HRSAV	5,110	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	0.00E+00
COAUHC	8.32E-06	0.00E+00
HOAOH	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

13-Apr-95 PAGE 2 OF 2

Bldg Number:

10000

System Type

14

System Name:

VENTILATION

System Number:

SF-31

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,997.7	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	3,285.2	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				(
TOTAL	0.0	3,285.2	0.0	(

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

80,294

10000

07-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

FTR-1

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								
Category	Construction	Use	Occ.	Day				
1	BRICK	DIV CMD/CNTRL BUILDIN	600-1800	MON-FRI				

20 32

Enter Weeks	of Summer:	L
Enter Weeks	of Winter:	

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	1200	1800	1800	1800	1800	1800	1200

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		32.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	 Superior contract the second contract of the second contra
Cooling HRSON	2,560	3,360
Heating HRSON	4,096	5,376
C/H HRSON	6,674	8,760
Cooling HRSAV	800	
Heating HRSAV	1,280	
C/H HRSAV	2,086	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	6	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

10000

System Type System Name:

12 BASEBOARD RADIATION

System Number:

FTR-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,678.3	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	1,533.1	
Sub Total	0.0	5,365.4	1,533.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	223.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,365.4	1,756.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10000

DATE:

07-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Name:

CONVERTER AND PUMPS

System Number:

System Type

HE1

Typical Building Information

	Typical Ballanig Information						
Category		Construction	Use	Occ.	Day		
	10	BRICK	DIV CMD/CNTRL BUILDIN	600-1800	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	er Langier	INPUT
Motor HP	0	
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		1.372
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHO	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	. 0	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

10000

System Type

9 CONVERTER AND PUMPS

System Name: System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/vr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	10.2	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	10.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10000

DATE: 07-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

80,294

System Type

Stop Time

HE2

System Name:

CONVERTER AND PUMPS

System Number:

Typical Building Information

Typical Building Information							
Category	Construction	n Use	Occ.	Day			
	10 BRICK	DIV CMD/CNTRL BUILDIN	600-1800	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		1.108
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
HOAOH	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	0	6
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bidg Number:

10000

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	8.2	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	·
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	8.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10000

07-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

80,294

CH-1

Building Sq.Ft.: System Type

System Name:

CHILLER AND PUMPS

System Number:

Typical Building Information

		i y picai E	anding mioritation		
Category		Construction	Use	Occ.	Day
, , , , , , , , , , , , , , , , , , ,	10	BRICK	DIV CMD/CNTRL BUILDIN	600-1800	MON-FRI

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		30
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
НОАОН	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHO	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
` NSC	5.97E+04	5.97E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number: System Type

10000

System Name:

CHILLER AND PUMPS

System Number:

CH-1

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	1.4	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	1.4	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	287.1	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		· · · · · · · · · · · · · · · · · · ·		
Run Time, and Safety Alarms				3
TOTAL	1.4	287.1	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10000

07-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

80,294

Building Sq.Ft.: System Type

System Name:

CHILLER AND PUMPS

System Number:

CH-2

Typical Building Information

Typical Landing III							
Category	Construction	Use	Occ.	Day			
	0 BRICK	DIV CMD/CNTRL BUILDIN	600-1800	MON-FRI			

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	44.75	S	M	T	W	TH	F	S
Start Time		0	0	0	0	0	00	0
Stop Time		2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		30
MBTU CAPC.		0
kW/Ton		. 0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	2.17E-05	2.17E-05
COAUHC	8.32E-06	8.32E-06
НОАОН	14.77	14.77
HOAOHC	9.07	9.07
COAOC	2.10E-05	2.10E-05
COAOHC	8.04E-06	8.04E-06
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	1.26E-05	1.26E-05
NSUCHC	7.74E-06	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	8.71E+03	8.71E+03
NSC	5.97E+04	5.97E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

07-Apr-95 PAGE 2 OF 2

Bldg Number:

10000

System Type System Name:

CHILLER AND PUMPS

System Number:

CH-2

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	1.4	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	1.4	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	287.1	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,			1	
Run Time, and Safety Alarms				3
TOTAL	1.4	287.1	0.0	3

ENERGY CALCULATIONS

BUILDING 10030

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

2,372

10030

EMC NO.: 1406-006

DATE:

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

2

System Name:

H&V UNIT

System Number:

AHU1

Typical Building Information

. 7					
Category	Construction	Use	Occ.	Day	
24	BRICK	CHAPEL ZONE	0800-1400	SUN	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Peguired Operation	S	М	T	W	TH	F	S
Required Operation Start Time	800	0	900	0	900	0	0
Stop Time	1300	0	1200	0	1200	0	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	17.5
Load Factor	0.8
CFM - HTG	3216
CFM - CLG	0
% OA	48.78%
% Area	58.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	340	3,360
Heating HRSON	544	5,376
C/H HRSON	886	8,760
Cooling HRSAV	3,020	
Heating HRSAV	4,832	
C/H HRSAV	7,874	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	372.76	372.76
HOAOHC	185.87	185.87
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	7.01E+03	7.01E+03
NSC	2.51E+05	2.51E+05
FV	147	147
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10030

System Type
System Name:

2 H&V UNIT

System Number:

AHU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	94,795.3	0.0	
Optimum ST/SP	0.0	2,263.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	345.9	
Sub Total	0.0	97,058.7	345.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	22.1	
DDC Control	0.0	0.0	9.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	97,058.7	377.7	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10030

Building Sq.Ft.:

7,048

System Type

Stop Time

H&V UNIT

1300

System Name: System Number:

AHU2

	Typical Building Information						
Category Co		Construction	Use	Occ.	Day		
t		25	BRICK	CHAPEL OFFICE ZONE	0600-1700	SUN-FRI	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	
Start Time	600	600	600	600	600	600	
Start Time					4700	4700	

1700

Present Operations	S	М	T	W	TH	F	S
Start Time		0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

1700

SHA.	INPUTS		INPUT
	Motor HP		15
	Load Factor		0.8
	CFM - HTG		2900
<u> </u>	CFM - CLG		0
 -	% OA		31.03%
	% Area		77.00%
	TON CAPC.		0
	MBTU CAPC.		0
-	kW/Ton		0
	MOSON		12
	EFF		1
LOOK-	UP VALUE		
	EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,480	3,360
Heating HRSON	2,368	5,376
C/H HRSON	3,859	8,760
Cooling HRSAV	1,880	
Heating HRSAV	3,008	
C/H HRSAV	4,901	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	347.79	347.79
HOAOHC	173.42	173.42
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.26E+04	1.26E+04
NSC	3.30E+04	3.30E+04
FV	52	52
CHWR	9.57	9.57
OAR	7.40	7.40
OPT		188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

06-Apr-95

DATE:

PAGE 1 OF 2

S

1700

1700

1700

0

0

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

10030

System Type

2 H&V UNIT

System Name: System Number:

AHU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	50,581.4	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	.178.9	
Sub Total	0.0	52,521.5	178.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	9.0	
DDC Control	0.0	0.0	68.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	•			
Run Time, and Safety Alarms				3
TOTAL	0.0	52,521.5	256.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10030

EMC NO.: 1406-006

DATE: 06-Арг-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

7,048

System Type

System Name:

10 HOT WATER BOILER AND PUMPS

System Number:

HE1

Typical Building Information

Typical Ballating IIII-						
Category		Construction	Use	Occ.	Day	
		5 BRICK	CHAPEL OFFICE ZONE	0600-1700	SUN-FRI	

Enter Weeks of Summer:

20

Citto treette et emittere	
Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	1300	1800	1800	1800	1800	1800	1200
Stop Time			L				

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	0.505
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 0.00%	0.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,580	3,360
Heating HRSON	4,128	5,376
C/H HRSON	6,726	8,760
Cooling HRSAV	780	
Heating HRSAV	1,248	
C/H HRSAV	2,034	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	347.79	347.79
HOAOHC	173.42	173.42
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.26E+04	1.26E+04
NSC	3.30E+04	3.30E+04
FV	52	52
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

10030

System Type System Name: 10 HOT WATER BOILER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	3.7	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3_
TOTAL	0.0	0.0	3.7	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

10030

EMC NO.: 1406-006

06-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

7,048

System Type System Name:

12 **BASEBOARD RADIATION**

System Number:

FTR-1

Typical Building Information

		. , ,			
Category		Construction	Use	Occ.	Day
	25	BRICK	CHAPEL OFFICE ZONE	0600-1700	SUN-FRI

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	600	600	600	600	600	600	0
Stop Time	1300	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	FF	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		28.50%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,480	3,360
Heating HRSON	2,368	5,376
C/H HRSON	3,859	8,760
Cooling HRSAV	1,880	
Heating HRSAV	3,008	
C/H HRSAV	4,901	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	347.79	347.79
НОАОНС	173.42	173.42
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.26E+04	1.26E+04
NSC	3.30E+04	3.30E+04
FV	52	52
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10030

System Name:

12 BASEBOARD RADIATION

System Number:

FTR-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,600.5	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	66.2	
Sub Total	0.0	4,888.1	66.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	25.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				33
TOTAL	0.0	4,888.1	91.5	3

ENERGY CALCULATIONS

BUILDING 10050

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

10050

03-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

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EMC NO.: 1406-006

Building Sq.Ft.:

77,130 1

System Type

H&V UNIT WITHOUT RETURN FAN System Name:

System Number:

AHU1

Typical Building Information

.,,							
Category Constructi		Use	Occ.	Day			
8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	ŦΗ	F	S
Start Time	800	600	600	600	600	600	800
Stop Time	2000	2100	2100	2100	2100	2100	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	20875
CFM - CLG	0
% OA	20.00%
% Area	14.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.70	0% 86.70%

HOURS	REQUIRED	
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	2,260	3,360
Heating HRSON	3,616	5,376
C/H HRSON	5,892	8,760
Cooling HRSAV	1,100	
Heating HRSAV	1,760	
C/H HRSAV	2,868	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bldg Number:

10050

System Type

4

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	29,595.5	0.0	•
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	584.0	
Sub Total	0.0	31,535.6	584.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	105.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	31,535.6	689.3	Variable 1843

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10050

Building Sq.Ft.: System Type 77,130

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU2

Typical Building Information

Typical Building Information								
Category		Construction	Use	Occ.	Day			
	8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	800	600	600	600	600	600	800
Stop Time	2000	2100	2100	2100	2100	2100	2000

BLDG:

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		20875
CFM - CLG		0
% OA		20.00%
% Area		14.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE	,	
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,260	3,360
Heating HRSON	3,616	5,376
C/H HRSON	5,892	8,760
Cooling HRSAV	1,100	
Heating HRSAV	1,760	
C/H HRSAV	2,868	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

03-Apr-95

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bldg Number:

10050

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	29,595.5	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	584.0	
Sub Total	0.0	31,535.6	584.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	105.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	31,535.6	689.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

۰0

10050

EMC NO.: 1406-006

TE: 03-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

77,130

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU3

Typical Building Information

Typiou, Duning							
Category	Construction	Use	Occ.	Day			
	8 BRICK	PHYS FIT CENTER	0645-2000	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	800	600	600	600	600	600	800
Stop Time	2000	2100	2100	2100	2100	2100	2000

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS			INPUT
Moto	or HP		15
Load I	Factor		0.8
CFM -	HTG		20875
CFM -	CLG		0
	% OA		20.00%
%	Area		14.00%
TON C	APC.		0
MBTU (CAPC.		0
k\	N/Ton		0
M	OSON		12
	EFF		1
LOOK-UP VALU	E	-	
EI	FFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,260	3,360
Heating HRSON	3,616	5,376
C/H HRSON	5,892	8,760
Cooling HRSAV	1,100	
Heating HRSAV	1,760	
C/H HRSAV	2,868	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bldg Number:

10050

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	29,595.5	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	584.0	
Sub Total	0.0	31,535.6	584.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	105.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	31,535.6	689.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10050

03-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

77,130

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU4

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
Category		Construction	Use	Occ.	Day		
	8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	·S
Start Time	800	600	600	600	600	600	800
Stop Time	2000	2100	2100	2100	2100	2100	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		20875
CFM - CLG		0
% OA		20.00%
% Area		14.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,260	3,360
Heating HRSON	3,616	5,376
C/H HRSON	5,892	8,760
Cooling HRSAV	1,100	
Heating HRSAV	1,760	
C/H HRSAV	2,868	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bldg Number:

10050

System Type

.

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/vr
Schedule ST/SP	0.0	29,595.5	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	***
Night Setback	0.0	0.0	584.0	
Sub Total	0.0	31,535.6	584.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	105.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0,0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	31,535.6	689.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

77,130

10050

BLDG:

Building Sq.Ft.: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU5

Typical Building Information

	Typical Building Information								
[Category	Construction Use		Occ.	Day				
	8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	1100	1600	1700	1600	1700	1600	1100
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		6500
CFM - CLG		0
% OA		100.00%
% Area	4.00%	
TON CAPC.		0
MBTU CAPC		0
kW/Tor		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,000	3,360
Heating HRSON	1,600	5,376
C/H HRSON	2,607	8,760
Cooling HRSAV	2,360	
Heating HRSAV	3,776	
C/H HRSAV	6,153	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

03-Apr-95

DATE:

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bldg Number:

10050

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	22,488.1	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	166.8	
Sub Total	0.0	23,175.2	166.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	30.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	23,175.2	197.0	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

Building Sq.Ft.:

77,130

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

Typical Building Information

Typical Ballania Information									
Category Construction		Use	Occ.	Day					
8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI					

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	IH	T .	3
Start Time	1100	1600	1700	1600	1700	1600	1100
Stop Time	2000	2000	2000	2000	2000	2000	2000

10050

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	5
Load Factor	0.8
CFM - HTG	6500
CFM - CLG	0
% OA	100.00%
% Area	4.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,000	3,360
Heating HRSON	1,600	5,376
C/H HRSON	2,607	8,760
Cooling HRSAV	2,360	
Heating HRSAV	3,776	
C/H HRSAV	6,153	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

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03-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bldg Number:

10050

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	22,488.1	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	166.8	
Sub Total	0.0	23,175.2	166.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	30.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	23,175.2	197.0	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

77,130

10050

DATE: 03-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU7

Typical Building Information

Typical Dullating information							
Category	Construction	Use	Occ.	Day			
- July 30.7	8 BRICK	PHYS FIT CENTER	0645-2000	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	1100	1600	1700	1600	1700	2600	1100
Stop Time	2000	2000	2000	2000	2000	2000	2000

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	a. Pagrabi	INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		2500
CFM - CLG		0
% OA		100.00%
% Area		1.60%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	800	3,360
Heating HRSON	1,280	5,376
C/H HRSON	2,086	8,760
Cooling HRSAV	2,560	
Heating HRSAV	4,096	
C/H HRSAV	6,674	1

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bldg Number:

10050

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	10,207.9	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	66.7	
Sub Total	0.0	10,495.4	66.7	
Economizer	0.0	0.0	0.0	-
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	10,495.4	78.8	200.1 × 1 1 10.5 (2.5 × 2.5 ×

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

Building Sq.Ft.:

77,130

10050

System Type

System Name: System Number: **H&V UNIT WITHOUT RETURN FAN**

8UHA

Typical Building Information

Typical Bullating Information							
Category Construction		Use	Occ.	Day			
8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	800	600	600	600	600	600	800
Stop Time	2000	2100	2100	2100	2100	2100	2000

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	7.5	
Load Factor		0.8
CFM - HTG		9364
CFM - CLG	0	
% OA	100.00%	
% Area		6.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,260	3,360
Heating HRSON	3,616	5,376
C/H HRSON	5,892	8,760
Cooling HRSAV	1,100	
Heating HRSAV	1,760	
C/H HŘSAV	2,868	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
· ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
F۷	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

03-Apr-95

DATE:

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CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bldg Number:

10050

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

8UHA

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	15,438.8	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	250.3	
Sub Total	0.0	16,450.9	250.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	45.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	16,450.9	295.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10050

DATE: 03-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

77,130

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU9

Typical Building Information

Category	Construction	Use	Occ.	Day
8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	800	600	600	600	600	600	800
Stop Time	2000	2100	2100	2100	2100	2100	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	3
Load Factor	0.8
CFM - HTG	4170
CFM - CLG	0
% OA	100.00%
% Area	2.80%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,260	3,360
Heating HRSON	3,616	5,376
C/H HŘSON	5,892	8,760
Cooling HRSAV	1,100	
Heating HRSAV	1,760	
C/H HRSAV	2,868	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	· 7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

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Bldg Number: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,496.0	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	116.8	
Sub Total	0.0	6,921.9	116.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	21.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	6,921.9	137.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10050

03-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

77,130

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU10

Typical Building Information

	Typical Dallating Internation							
j	Category	Construction	Use	Occ.	Day			
		BRICK	PHYS FIT CENTER	0645-2000	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	800	600	600	600	600	600	800
Stop Time	2000	2100	2100	2100	2100	2100	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT					
Motor HP		10					
Load Factor		0.8					
CFM - HTG		12000					
CFM - CLG		0					
% OA		100.00%					
% Area		8.00%					
TON CAPC.		0					
MBTU CAPC.		0					
kW/Ton		0					
MOSON	_	12					
EFF		1					
LOOK-UP VALUE	LOOK-UP VALUE						
EFFHP	85.80%	85.80%					

	REQUIRED	the state of the control of the first filter of
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	2,260	3,360
Heating HRSON	3,616	5,376
C/H HRSON	5,892	8,760
Cooling HRSAV	1,100	
Heating HRSAV	1,760	
C/H HRSAV	2,868	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	126.26	126.26
НОАОНС	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
ОРТ	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

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Bldg Number:

10050

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	19,937.3	0.0	
Optimum ST/SP	0.0	1,307.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	333.7	
Sub Total	0.0	21,244.3	333.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	60.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	21,244.3	393.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10050

PREPARED BY: CSW/BMG

03-Apr-95

EMC NO.: 1406-006

CHECKED BY: KC/WLC

PAGE 1 OF 2

DATE:

Building Sq.Ft.:

77,130

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: AHU11

Typical Building Information

Typical Building information							
Category		Construction	Use	Occ.	Day		
	8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	800	600	600	600	600	600	800
Stop Time	2000	2100	2100	2100	2100	2100	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		10
Load Factor		0.8
CFM - HTG		14200
CFM - CLG		0
% OA		100.00%
% Area		9.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,260	3,360
Heating HRSON	3,616	5,376
C/H HRSON	5,892	8,760
Cooling HRSAV	1,100	
Heating HRSAV	1,760	
C/H HRSAV	2,868	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bldg Number:

10050

System Type

....

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	19,937.3	0.0	
Optimum ST/SP	0.0	1,307.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	375.4	
Sub Total	0.0	21,244.3	375.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	67.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms			1	3
TOTAL	0.0	21,244.3	443.2	11 (12) (13) (13)

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10050

Building Sq.Ft.: System Type

77,130

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU12

Typical Building Information

Typical Danaing Information						
Category	Construction	Use	Occ.	Day	ĺ	
8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI	ĺ	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	800	600	600	600	600	600	800
Stop Time	2000	2100	2100	2100	2100	2100	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		7.5
Load Factor		0.8
CFM - HTG		10500
CFM - CLG		0
% OA		100.00%
% Area		7.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,260	3,360
Heating HRSON	3,616	5,376
C/H HRSON	5,892	8,760
Cooling HRSAV	1,100	
Heating HRSAV	1,760	
C/H HRSAV	2,868	

Maria.	CONSTANT	LOOK-UP	INPUT
	HOAUH	0.00	0.00
	HOAUHC	0.00	0.00
	COAUC	0.00E+00	0.00E+00
	COAUHC	0.00E+00	0.00E+00
	HOAOH	126.26	126.26
	HOAOHC	77.49	77.49
	COAOC	0.00E+00	0.00E+00
	COAOHC	0.00E+00	0.00E+00
	DC DUTY	0.00	0.00
	DC DEMAN	0.17	0.17
	ECC	0.00E+00	0.00E+00
	ECHC	0.00E+00	0.00E+00
	NSUCC	0.00E+00	0.00E+00
	NSUCHC	0.00E+00	0.00E+00
	DDCCHC	0.00E+00	0.00E+00
	DDCCC	0.00E+00	0.00E+00
	DSC	9.76E+03	9.76E+03
	NSC	5.41E+04	5.41E+04
	FV	0	0
	CHWR	9.57	9.57
	OAR	7.40	7.40
	OPT	188.00	188.00
·			

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

DATE:

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CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

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Bldg Number:

10050

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	15,438.8	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	292.0	
Sub Total	0.0	16,450.9	292.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	52.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	16,450.9	344.7	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

77,130

10050

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

03-Apr-95

Building Sq.Ft.: System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HE1

Typical Building Information

	. y p.ou. =	anding more many		
Category	Construction	Use	Occ.	Day
8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI

Enter Weeks of Summer:

Enter Weeks of Winter:	32

Required Operation	S	M	T	W	TH	F	5
Start Time	800	600	600	600	600	600	800
Stop Time	2000	2100	2100	2100	2100	2100	2000
<u> </u>							

BLDG:

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		1.60%
TON CAPC.		0
MBTU CAPC.		0.563
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS	REQUIRED	I work to be a light to be a
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	2,260	3,360
Heating HRSON	3,616	5,376
C/H HRSON	5,892	8,760
Cooling HRSAV	1,100	
Heating HRSAV	1,760	
C/H HRSAV	2,868	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC		9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

10050

System Type

ç

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,432.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	66.7	
Sub Total	0.0	7,119.7	66.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.0	
HW OA Reset	0.0	0.0	4.2	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	,			
Run Time, and Safety Alarms				3
TOTAL	0.0	7,119.7	82.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10050

Building Sq.Ft.:

77,130

System Type

CONVERTER AND PUMPS

System Name: System Number:

HE2

Typical Building Information					
Category		Construction	Use	Occ.	Day
	8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH_	F	S
Start Time	800	600	600	600	600	600	800
Stop Time	2000	2100	2100	2100	2100	2100	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		98.40%
TON CAPC.		0
MBTU CAPC.		6.512
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,260	3,360
Heating HRSON	3,616	5,376
C/H HRSON	5,892	8,760
Cooling HRSAV	1,100	
Heating HRSAV	1,760	
C/H HRSAV	2,868	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC		9.76E+03
NSC		5.41E+04
FV	0	0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

EMC NO.: 1406-006

03-Apr-95 DATE:

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bidg Number:

10050

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	18,162.7	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	4,104.4	
Sub Total	0.0	20,102.8	4,104.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	740.7	
HW OA Reset	0.0	0.0	48.2	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	20,102.8	4,893.3	3. A.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10050

03-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

77,130 **Building Sq.Ft.:**

System Type

System Name:

CONVERTER AND PUMPS

for pool water

HE3 System Number:

Typical Building Information

	Typical Ballating Information							
ſ	Category	Construction	Use	Occ.	Day			
1	8	BRICK	PHYS FIT CENTER	0645-2000	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	900	1400	1500	1400	1500	1400	830
Stop Time	1900	1900	1900	1900	1900	1900	1900

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		10
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		1.065
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,154	3,360
Heating HRSON	1,846	5,376
C/H HRSON	3,009	8,760
Cooling HRSAV	2,206	
Heating HRSAV	3,530	
C/H HRSAV	5,751	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	126.26	126.26
HOAOHC	77.49	77.49
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	9.76E+03	9.76E+03
NSC	5.41E+04	5.41E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

03-Apr-95 PAGE 2 OF 2

Bldg Number:

10050

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE3

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	24,537.7	0.0	
Optimum ST/SP	0.0	1,307.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	W
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	25,844.7	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	7.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	25,844.7	7.9	3

ENERGY CALCULATIONS

BUILDING 10100

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10100

Building Sq.Ft.: System Type

11,250

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

Typical Building information									
Category	Construction	Use	Occ.	Day	l				
	7 BRICK	BN HQ BLDG	0600-1700	SUN-SAT					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	1230
CFM - CLG	0
% OA	100.00%
% Area	21.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

05-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10100

System Type

....

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	8,214.2	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	147.6	
Sub Total	0.0	8,501.7	147.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	11.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	8,501.7	159.0	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10100

PAGE 1 OF 2

DATE:

EMC NO.: 1406-006

CHECKED BY: KC/WLC

05-Apr-95 PREPARED BY: CSW/BMG

Building Sq.Ft.:

11,250

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-2

Typical Building Information

Typical ballang information								
Category		Construction	Use	Occ.	Day			
5233317	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

20 32

Enter Weeks of Summer:	L
Enter Weeks of Winter:	

Required Operation	S	M	T	W	TH	F	S
Start Time	(600	600	600	600	600	0
Stop Time	(1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	1
Load Factor	0.8
CFM - HTG	210
CFM - CLG	0
% OA	100.00%
% Area	4.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10100

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,629.4	0.0	
Optimum ST/SP	0.0	162.0	0.0	***************************************
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	-
Night Setback	0.0	0.0	28.1	
Sub Total	0.0	4,791.4	28.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	· · · · · · · · · · · · · · · · · · ·
DDC Control	0.0	0.0	2.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,791.4	30.3	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10100

EMC NO.: 1406-006

DATE: 04-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

11,250

System Type

Ç

System Name:

CONVERTER AND PUMPS

System Number:

HE1

Typical Building Information

Category	Construction	Use	Occ.	Day
17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

	•	M	т	w	TH	F	S
Required Operation Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	0.2602
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC		4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

ECCATION. 11. Dr

Bldg Number: System Type 10100

System Name:

9 CONVERTER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,041.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,328.6	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	1.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,328.6	1.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10100

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

04-Apr-95

EMC NO.: 1406-006

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Building Sq.Ft.:

11,250 12

System Type

System Name:

System Number:

BASEBOARD RADIATION

HE2

Typical Building Information

Category	Construction	Use	Occ.	Day
17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		75.00%
TON CAPC.		0
MBTU CAPC.		0.1117
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

10100 12

System Type

BASEBOARD RADIATION

System Name: System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,268.5	0.0	
Optimum ST/SP	0.0	129.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	527.0	
Sub Total	0.0	2,397.8	527.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	40.9	
HW OA Reset	0.0	0.0	0.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,397.8	568.7	3

ENERGY CALCULATIONS

BUILDING 10110

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10110

Building Sq.Ft.:

12,450

System Type

H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

AHU1

	Typical E	suliding information		
Category	Construction	Use	Occ.	Day
17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	2
Load Factor	0.8
CFM - HTG	1230
CFM - CLG	0
% OA	100.00%
% Area	21.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-HP	INPUT
HOAUH		0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

DATE:

10-Apr-95

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

10-Apr-95 PAGE 2 OF 2

Bldg Number:

10110

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	8,214.2	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	163.3	And the state of t
Sub Total	0.0	8,501.7	163.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	8,501.7	176.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

12,450

System Type System Name:

Building Sq.Ft.:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU2

Typical Building Information

Typical Building Information								
Category	Construction	Use	Occ.	Day				
1	7 BRICK	BN HQ BLDG	0600-1700	SUN-SAT				

Enter Weeks of Summer:

32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

10110

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1
Load Factor		0.8
CFM - HTG		210
CFM - CLG		0
% OA	100.00%	
% Area		4.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

	REQUIRED HR/YR	
CALCULATIONS	אואה	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

10-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

10-Apr-95 PAGE 2 OF 2

Bldg Number:

10110

System Type

.

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,629.4	0.0	
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	31.1	
Sub Total	0.0	4,791.4	31.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	2.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	100000000000000000000000000000000000000
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,791.4	33.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10110

BLDG: 12,450

Building Sq.Ft.: System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

Typical Building Information									
Category	C	onstruction	Use	Occ.	Day				
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.2602
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

	REQUIRED	
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT LOOK-UP INPUT HOAUH 0.00 0.00 COAUC 0.00E+00 0.00E+00 COAUHC 0.00E+00 0.00E+00 HOAOH 257.00 257.00 HOAOHC 158.00 158.00 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCH 0.00E+00 0.00E+00 DSC 4.84E+03 4.84E+03 NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40 OPT <		, ,	
HOAUH	CONSTANT	LOOK-UP	INPUT
COAUC 0.00E+00 0.00E+00 COAUHC 0.00E+00 0.00E+00 HOAOH 257.00 257.00 HOAOHC 158.00 158.00 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00		0.00	0.00
COAUHC 0.00E+00 0.00E+00 HOAOH 257.00 257.00 HOAOHC 158.00 158.00 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCH 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00	HOAUHC	0.00	0.00
HOAOH 257.00 257.00 HOAOHC 158.00 158.00 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 TDCCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 TDCCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00	COAUC	0.00E+00	0.00E+00
HOAOHC 158.00 158.00 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 4.84E+03 4.84E+03 NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	COAUHC	0.00E+00	0.00E+00
COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCH 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 TDCCC 0.00E+00 0.00E+00 DSC 4.84E+03 4.84E+03 NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	HOAOH	257.00	257.00
COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 TDCCC 0.00E+00 0.00E+00 CDCC 0.00E+00 0.00E+00 DCCC 0.00E+00 0.00E+00 CHWR 9.57 9.57 OAR 7.40 7.40	HOAOHC	158.00	158.00
DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 4.84E+03 4.84E+03 NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	COAOC	0.00E+00	0.00E+00
DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 4.84E+03 4.84E+03 NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	COAOHC	0.00E+00	0.00E+00
ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 4.84E+03 4.84E+03 NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	DC DUTY	0.00	0.00
ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 4.84E+03 4.84E+03 NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	DC DEMAN	0.17	0.17
NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 4.84E+03 4.84E+03 NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	ECC	0.00E+00	0.00E+00
NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 4.84E+03 4.84E+03 NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	ECHC	0.00E+00	0.00E+00
DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 4.84E+03 4.84E+03 NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	NSUCC	0.00E+00	0.00E+00
DDCCC 0.00E+00 0.00E+00 DSC 4.84E+03 4.84E+03 NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	NSUCHO	0.00E+00	0.00E+00
DSC 4.84E+03 4.84E+03 NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	DDCCHC	0.00E+00	0.00E+00
NSC 6.25E+04 6.25E+04 FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	DDCCC	0.00E+00	0.00E+00
FV 0 0 CHWR 9.57 9.57 OAR 7.40 7.40	DSC	4.84E+03	4.84E+03
CHWR 9.57 9.57 OAR 7.40 7.40	NSC	6.25E+04	6.25E+04
OAR 7.40 7.40	FV	0	0
	CHWR	9.57	9.57
OPT 188.00 188.00	OAR	7.40	7.40
	OPT	188.00	188.00

EMC NO.: 1406-006

DATE: 04-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

10110

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,041.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,328.6	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	1.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,328.6	1.9	3594 - 377 Km 34

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

450

10110

Building Sq.Ft.:

12,450

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE2

Typical Building Information

	Typical Danating Information										
Category	Category Construction		Use	Occ.	Day						
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT						

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.75
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	75.00%
TON CAPC.	0
MBTU CAPC.	0.1117
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	. 7.40
OPT	188.00	188.00

EMC NO.: 1406-006

DATE: 10-Apr-95

PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

10-Apr-95 PAGE 2 OF 2

Bldg Number:

10110

System Type

12

System Name: System Number:

HE2

BASEBOARD RADIATION

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,268.5	0.0	<u> </u>
Optimum ST/SP	0.0	129.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	583.3	
Sub Total	0.0	2,397.8	583.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	45.2	
HW OA Reset	0.0	0.0	0.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,397.8	629.3	3

ENERGY CALCULATIONS

BUILDING 10112

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Building Sq.Ft.:

BLDG:

10112

49,162 9

System Type

CONVERTER AND PUMPS System Name:

System Number:

HE1

EMC NO.: 1406-006

01-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Typical Building Information

Typiout Danaing Internation								
Category	Construction	Use	Occ.	Day				
14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI				

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	2	
Load Factor	0.8	
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.	0	
MBTU CAPC.	0.3875	
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	. 0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

10112

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	287.5	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	2.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				***************************************
Run Time, and Safety Alarms				3
TOTAL TOTAL TOTAL	0.0	287.5	2.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10112

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

01-Apr-95

PAGE 1 OF 2

DATE:

Building Sq.Ft.:

49,162 12

System Type System Name:

BASEBOARD RADIATION

System Number:

HE2

Typical Building Information

	· / prout = ununing morning m								
ſ	Category	Construction	Use	Occ.	Day				
t	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI				

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	The service of the se	INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.6683
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95

PAGE 2 OF 2

Bidg Number:

10112

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	129.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	129.4	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	4.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms	,			3
TOTAL	0.0	129.4	4.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10112

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

02-Apr-95

EMC NO.: 1406-006

PAGE 1 OF 2

DATE:

Building Sq.Ft.:

12,289

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: AHU1

Typical Building Information

Category	Construction	Use	Occ.	Day
14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		770
CFM - CLG		0
% OA		100.00%
% Area		17.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FM	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10112

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	101.6	
Sub Total	0.0	1,683.3	101.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.2	
HW OA Reset	0.0	0.0 i	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				33
TOTAL	0.0	1,683.3	113.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10112

Building Sq.Ft.:

12,289

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU2

Typical Building Information

		i y picai L	rananig miorinadon		
Category		Construction	Use	Occ.	Day
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	low	INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		770
CFM - CLG		0
% OA		100.00%
% Area	ı	17.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton	1	0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5.376
C/H HRSON	3,389	8.760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
НОАОНС	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
, NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

02-Apr-95

DATE:

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10112

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.01	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	101.6	
Sub Total	0.0	1,683.3	101.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.01	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				· · · · · · · · · · · · · · · · · · ·
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	113.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10112

1700

1700 |

1700

EMC NO.: 1406-006

DATE: 02-Apr-95
PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

Building Sq.Ft.:

12,289

System Type

Stop Time

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU4

Typical Building Information

		i y picai i	sanding misormanon		
Category	C	onstruction	Use	Occ.	Day
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI

0|

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

1700

Required Operation	S		M	T	W	TH	F	S
Start Time		0	600	600	600	600	600	
						4700	4700	

1700|

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		770
CFM - CLG	1	0
% OA		100.00%
% Area		17.00%
TON CAPC.	i	0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS	REQUIRED	PRESENT
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	101.6	
Sub Total	0.0	1,683.3	101.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	113.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10112

PAGE 1 OF 2

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

01-Apr-95

Building Sq.Ft.:

36,867

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU5

Typical Building Information

Category	Construction		Use	Occ.	Day	
	15 i	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT	

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	24001	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		1300
CFM - CLG		0
% OA		100.00%
% Area		16.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS	REQUIRED	
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5.376
C/H HRSON	8,760	8,760
Cooling HRSAV	. 0	
Heating HRSAV	0	
C/H HRSAV	0	

CON	ISTANT	LOOK-UP	INPUT
	HOAUH	0.00	0.00
	HOAUHC	0.00	0.00
	COAUC	0.00E+00	0.00E+00
	COAUHC	0.00E+00	0.00E+00
	HOAOH	0.00	0.00
	HOAOHG	0.00	0.00
	COAOC	0.00E+00	0.00E+00
	COAOHC	0.00E+00	0.00E+00
	DC DUTY	0.00	0.00
DC	DEMAN	0.17	0.17
	ECC	0.00E+00	0.00E+00
	ECHC	0.00E+00	0.00E+00
	NSUCC	0.00E+00	0.00E+00
	NSUCHC	0.00E+00	0.00E+00
	DDCCHC	0.00E+00	0.00E+00
	DDCCG	0.00E+00	0.00E+00
	DSC	1.40E+04	1.40E+04
	NSC	0.00E+00	0.00E+00
	FVI	0	0
	CHWR	9.57	9.57
	OAR	7.40	7.40
	OPTI	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95

PAGE 2 OF 2

Bldg Number:

10112

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.01	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	87.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	87.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10112

DATE: 01-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

36,867

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

Typical Building Information

	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
Category	i	Construction	Use	İ	Occ.	Day		
	15	BRICK	ADM & SUPPLY, E	NL BRK	0000-2400	SUN-SAT		

Enter Weeks of Summer:

20

32 **Enter Weeks of Winter:**

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0 !	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		1060
CFM - CLG		0
% OA		100.00%
% Area		16.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS	REQUIRED	PRESENT
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	. 0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC		0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FM	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95

PAGE 2 OF 2

Bldg Number:

10112

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	87.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	87.8	ingere

ENERGY CALCULATIONS

BUILDING 10114

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10,114

EMC NO.: 1406-006

01-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

47,038

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE-1

Typical Building Information

Typical Dallang						
Category	Construction	Use	Occ.	Day		
14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.3875
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

10,114

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	287.5	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	2.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	287.5	2.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

BLDG:

10,114

DATE:

01-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

LOCATION: FT. DRUM Building Sq.Ft.:

47,038

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE-2

Typical Building Information

Typical Danielle							
Category	Construction	nstruction Use		Day			
14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.75
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	0.6683
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 65.00	0% 65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC		110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

01-Apr-95

PAGE 2 OF 2

Bldg Number:

10,114

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE-2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	4.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	4.9	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10114

Building Sq.Ft.:

11,760

System Type **H&V UNIT WITHOUT RETURN FAN** System Name:

System Number: AHU1 EMC NO.: 1406-006

DATE: 02-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Typical Building Information

	1) piou. Duning								
1	Category	Construction	Use	Occ.	Day				
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI				

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.33
Load Factor	0.8
CFM - HTG	770
CFM - CLG	0
% OA	100.00%
% Area	17.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 65.	00% 65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	111 99935 51 91 47 54
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC		5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	· · · · · · · · · · · · · · · · · · ·
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	1
Night Setback	0.0	0.0	97.3	
Sub Total	0.0	1,683.3	97.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	11.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	108.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

Building Sq.Ft.:

11,760

10114

System Type

1,,,,,,

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU4

Typical Building Information

Typical Bullang Information									
Category	Construction	Use	Occ.	Day					
	4 BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI					

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	-41	David II	INPUT
Moto	r HP		0.33
Load F	actor		0.8
CFM - I	HTG		770
CFM -	CLG		0
%	OA		100.00%
% /	Area		17.00%
TON CA	NPC.		0
MBTU C	APC.		0
kV	//Ton		0
МО	SON		12
	EFF		1
LOOK-UP VALUE			
EF	FHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

	1.001/110	IN PROFES
CONSTANT	LOOK-UP	INPUI
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

02-Арг-95

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	97.3	
Sub Total	0.0	1,683.3	97.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	11.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,			-	
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	108.9	3.

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10114

Building Sq.Ft.:

35,279

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU5

Typical Building Information

	Typical Building Information								
Γ	Category Construction		Use	Occ.	Day				
1	15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT				

Enter Weeks of Summer: Enter Weeks of Winter:

32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	. 0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		1300
CFM - CLG		0
% OA		100.00%
% Area		16.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

01-Apr-95

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10114

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	84.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	-			
Run Time, and Safety Alarms	3			
TOTAL	0.0	0.0	84.1	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

35,279 **Building Sq.Ft.:**

System Type

H&V UNIT WITHOUT RETURN FAN System Name:

System Number: AHU6

Typical Building Information

	Typiour Dallaning Information					
Category Construction l		Use	Occ.	Day		
15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT		

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

10114

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	ki na hiji	INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		1060
CFM - CLG		0
% OA		100.00%
% Area		16.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
СОАОНС	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR		9.57
OAR		7.40
OPT	0.00	0.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

01-Apr-95

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10114

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	84.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	84.1	3

ENERGY CALCULATIONS

BUILDING 10120

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

12,450

10120

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

Typical ballottig information								
Category		Construction	Use	Occ.	Day			
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		1230
CFM - CLG		0
% OA		100.00%
% Area		21.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HŘSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR		7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10120

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	8,214.2	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	163.3	44
Sub Total	0.0	8,501.7	163.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.7	***
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	8,501.7	176.0	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10120

12,450

Building Sq.Ft.: System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-2

Typical Building Information

	Typical Building Information								
į	Category	Construction	Use	Occ.	Day				
ĺ	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT				

Enter Weeks of Summer: Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		1
Load Factor		0.8
CFM - HTG		210
CFM - CLG		0
% OA		100.00%
% Area		4.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	69.20%	69.20%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HŘSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00
		L

EMC NO.: 1406-006

CHECKED BY: KC/WLC

05-Apr-95 PREPARED BY: CSW/BMG

DATE:

PAGE 1 OF 2

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10120

System Type

H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

AHU-2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,629.4	0.0	
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	The American
Night Setback	0.0	0.0	31.1	
Sub Total	0.0	4,791.4	31.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	2.4	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,791.4	33.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10120

EMC NO.: 1406-006

DATE: 04-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

12,450

Building Sq.i c.

System Type System Name:

CONVERTER AND PUMPS

System Number:

HE1

Typical Building Information

. ypioti. 2 uniting unit						
Category	Construction	Use	Occ.	Day		
1	7 BRICK	BN HQ BLDG	0600-1700	SUN-SAT		

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.2602
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158:00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
- ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

10120

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,041.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	A delication of the second of
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,328.6	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	1.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	·
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,328.6	1.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10120

DATE: 04-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

12,450

System Type

System Name:

12 BASEBOARD RADIATION

System Number:

HE2

Typical Building Information

	Typical Building internation				
Category		Construction	Use	Occ.	Day
Category				0600-1700	SUN-SAT
	17	BRICK	BN HQ BLDG	0600-1700	3014-371

Enter Weeks of Summer:	20
Enter Weeks of Winter:	32

Secretary Operation	9	M	T	W	TH	F	S
Required Operation Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

	9	M	T	W	TH	F	S
Present Operations Start Time		0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.75
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	75.00%
TON CAPC.	0
MBTU CAPC.	0.1117
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
	5.00% 65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	1
C/H HRSAV	5,371]

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC		158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWF	9.57	9.57
OAF	7.40	7.40
OP7	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

10120

04-Apr-95 PAGE 2 OF 2

Date:

Bldg Number:

System Type System Name:

12 **BASEBOARD RADIATION**

System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,268.5	0.0	Will II y I
Optimum ST/SP	0.0	129.4	0.0	
Duty Cycle	0.0	0.0		
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	2,397.8	583.3 583.3	
Economizer	0.0	0.0		
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0		45.2	
Chilled Water Reset	0.0	0.0	0.8	
Condenser Water Reset	0.0		0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,	0.0	0.0	0.0	
Run Time, and Safety Alarms				_
TOTAL	0.0	2,397.8	629.3	3 3

ENERGY CALCULATIONS

BUILDING 10122

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10,122

Building Sq.Ft.:
System Type

49,156

System Name:

CONVERTER AND PUMPS

System Number:

HE-1

Typical Building Information

	Typical bullang information							
	Category	Construction	uction Use		Day			
T	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	A#14 1.63	INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.3875
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

(3/r)	CONSTANT	LOOK-UP	INPUT
	HOAUH	0.00	0.00
	HOAUHC	0.00	0.00
	COAUC	0.00E+00	0.00E+00
	COAUHC	0.00E+00	0.00E+00
	HOAOH	220.75	220.75
	HOAOHC	110.07	110.07
	COAOC	0.00E+00	0.00E+00
	COAOHC	0.00E+00	0.00E+00
	DC DUTY	0.00	0.00
	DC DEMAN	0.17	0.17
	ECC	0.00E+00	0.00E+00
	ECHC	0.00E+00	0.00E+00
	NSUCC	0.00E+00	0.00E+00
	NSUCHC	0.00E+00	0.00E+00
	DDCCHC	0.00E+00	0.00E+00
	DDCCC	0.00E+00	0.00E+00
	DSC	5.84E+03	5.84E+03
	NSC	4.86E+04	4.86E+04
	FV	0	0
	CHWR	9.57	9.57
	OAR	7.40	7.40
	OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

01-Apr-95

DATE:

PAGE 1 OF 2

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

10,122

System Type System Name:

CONVERTER AND PUMPS

System Number:

HE-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	287.5	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	2.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	PROF. ALL
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		<u>'</u>	77.77.00	
Run Time, and Safety Alarms				3
TOTAL	0.0	287.5	2.9	3 A

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG: 49,156

10,122

EMC NO.: 1406-006 01-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE-2

Typical Building Information

() proc. Danien g mornizon							
Category	Construction Use		Occ.	Day			
14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.6683
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	220.75	220.75
НОАОНС	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

10,122

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE-2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	4.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	4.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10122

DATE: 02-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

12,289

System Type

System Type
System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

Typical Duning miles							
Category Construction		Use	Occ.	Day			
14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.33
Load Factor	8.0
CFM - HTG	770
CFM - CLG	0
% OA	100.00%
% Area	17.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10122

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr	
Schedule ST/SP	0.0	1,626.4	0.0		
Optimum ST/SP	0.0	56.9	0.0		
Duty Cycle	0.0	0.0	0.0		
Demand Limit	0.0	0.0	0.0		•
Night Setback	0.0	0.0	101.6		
Sub Total	0.0	1,683.3	101.6		
Economizer	0.0	0.0	0.0		
Ventilation/Recirculation	0.0	0.0	0.0		
DDC Control	0.0	0.0	12.2		
HW OA Reset	0.0	0.0	0.0		
Chilled Water Reset	0.0	0.0	0.0		
Condenser Water Reset	0.0	0.0	0.0		
Chiller Demand Limit	0.0	0.0	0.0		
Remote Monitoring, Maintenance,					
Run Time, and Safety Alarms					3
TOTAL	0.0	1,683.3	113.8		3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

12,289

10122

DATE: 02-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU2

Typical Building Information

Typical Bullating Information									
Category	Construction	Use	Occ.	Day					
14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI					

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		770
CFM - CLG		0
% OA		100.00%
% Area		17.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HŘSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10122

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	101.6	
Sub Total	0.0	1,683.3	101.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	113.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

10122

Building Sq.Ft.:

12,289

System Type

H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

AHU4

Typical Building Information

	Typical building information									
Catego	Category Co		Use	Occ.	Day					
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	Police C.	INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		770
CFM - CLG		0
% OA		100.00%
% Area		17.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

02-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

10122

Bldg Number: System Type

.

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	101.6	
Sub Total	0.0	1,683.3	101.6	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	12.2	
HW OA Reset	0.0	0.0	0.0	PA
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		· ·		
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	113.8	3.

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10122

Building Sq.Ft.:

36,867

System Type

System Name: System Number: **H&V UNIT WITHOUT RETURN FAN**

AHU5

Typical Building Information

rypical banding information						
Category	Construction	Use	Occ.	Day		
15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT		

Enter Weeks of Summer:

32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		1300
CFM - CLG		0
% OA	100.00%	
% Area	16.70%	
TON CAPC.	0	
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF	1	
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC		1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

01-Apr-95

DATE:

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10122

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	,
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	87.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	87.8) 44 mm 24.00 a.3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10122

Building Sq.Ft.: System Type

36,867

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

Typical Building Information

Typical building information							
Category	Construction	Use	Occ.	Day			
15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0_	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		1060
CFM - CLG		0
% OA		100.00%
% Area		16.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0]
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHO		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

01-Apr-95

DATE:

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10122

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	,
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	4
DDC Control	0.0	0.0	87.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	87.8	3

ENERGY CALCULATIONS

BUILDING 10124

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10124

DATE: 14-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

47,038

System Type System Name:

CONVERTER AND PUMPS

System Number:

HE-1

Typical Building Information

,) p. ou						
Category		Construction	Use	Occ.	Day	
	14	BRICK	ADM & SUPPLY,ENL BRK	600-1700	MON-FRI	

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.3875
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	55505 2000 Sun 21 Visio
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	220.75	14.77
HOAOHC	110.07	9.07
COAOC	0.00E+00	2.10E-05
COAOHC	0.00E+00	8.04E-06
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	1.26E-05
NSUCHC	0.00E+00	7.74E-06
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	8.71E+03
NSC	4.86E+04	5.97E+04
FV	0	6
CHWR	9.57	9.57
OAR	7.40	. 7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

14-Apr-95 PAGE 2 OF 2

Bldg Number:

10124

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE-1

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	287.5	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	2.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms		3		
TOTAL	0.0	287.5	2.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

Building Sq.Ft.:

47,038

10,124

System Type

12

System Name: System Number: **BASEBOARD RADIATION**

HE-2

EMC NO.: 1406-006

DATE:

01-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Typical Building Information

	. , , , , , , , , , , , , , , , , , , ,			
Category	Construction	Use	Occ.	Day
14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0_
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.6683
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0]

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	. 0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

10,124

System Type

1:

System Name:

BASEBOARD RADIATION

System Number:

HE-2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	4.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	4.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10124

02-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

11,760

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

		.,,,,,,,,,	400400		
-	Category	Construction	Use	Occ.	Day
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI

Enter Weeks of Summer:

32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.33
Load Factor	0.8
CFM - HTG	770
CFM - CLG	0
% OA	100.00%
% Area	17.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 6	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	har to del transfel trade and the trade
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10124

System Type

H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	97.3	
Sub Total	0.0	1,683.3	97.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	11.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	108.9	

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10124

02-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

11,760

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: AHU2

Typical Building Information

.,								
Category		Construction	Use	Occ.	Day			
	14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F.	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		770
CFM - CLG		0
% OA		100.00%
% Area		17.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	- 7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10124

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	97.3	
Sub Total	0.0	1,683.3	97.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	11.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	+1 an
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	108.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10124

DATE:

02-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

11,760

System Type

H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

AHU4

Typical Building Information

Typical Bullating Internation								
Category	Construction	Use	Occ.	Day				
14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.33
Load Factor	0.8
CFM - HTG	770
CFM - CLG	0
% OA	100.00%
% Area	17.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 65.00	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC		5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR		7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10124

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	97.3	
Sub Total	0.0	1,683.3	97.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	11.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	108.9	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

35,279

10124

Building Sq.Ft.: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU5

Typical Building Information

Typical Building Information							
Category Construction		Use	Occ.	Day			
15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		1300
CFM - CLG		0
% OA		100.00%
% Area		16.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON	ļ	12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

01-Apr-95

DATE:

PAGE 1 OF 2

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10124

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	84.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	0.0	84.1	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10124

01-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

35,279

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

Typical Building Information

Typical Danding Information						
Category	Construction	Use	Occ.	Day		
15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	11.0	INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		1060
CFM - CLG		0
% OA		100.00%
% Area		16.70%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10124

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	-
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	84.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		·		
Run Time, and Safety Alarms				
TOTAL	0.0	0.0	84.1	

ENERGY CALCULATIONS

BUILDING 10130

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10130

TH

600

1700

0

2400

600

1700

0

2400

Building Sq.Ft.:

13,305

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

Start Time

Stop Time

Start Time

Stop Time

AHU1

Typical Building Information

Typical Building Information								
Category		Construction	Use	Occ.	Day			
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer: Enter Weeks of Winter:

20

600

0

2400

1700

S M T W					
	Required Operation	•	M	т	W

0

0

0

2400

Present Operations	S	M	Т	W	TH	F	S]

600

1700

0

2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		1230
CFM - CLG		0
% OA		100.00%
% Area		21.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HŘSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

DATE: 05-Apr-95

PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

PAGE 1 OF 2

S

0

0

0

2400

600

0

2400

1700

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10130

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	8,214.2	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	· · · · · · · · · · · · · · · · · · ·
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	174.5	
Sub Total	0.0	8,501.7	174.5	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	13.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,			1	
Run Time, and Safety Alarms				3
TOTAL	0.0	8,501.7	188.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10130

DATE: 05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

13,305

System Type

H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

AHU-2

Typical Building Information

Typical building information								
Category Construction		Use	Occ.	Day				
17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT				

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT			
Motor HP	Motor HP				
Load Factor		0.8			
CFM - HTG		210			
CFM - CLG	0				
% OA		100.00%			
% Area		4.00%			
TON CAPC.		0			
MBTU CAPC.		0			
kW/Ton		0			
MOSON		12			
EFF		1			
LOOK-UP VALUE					
EFFHP	69.20%	69.20%			

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10130

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU-2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,629.4	0.0	
Optimum ST/SP	0.0	162.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	33.2	
Sub Total	0.0	4,791.4	33.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	2.6	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	4,791.4	35.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10130

Building Sq.Ft.:

13,305

System Type

System Name: System Number: **CONVERTER AND PUMPS**

HE1

Typical Building Information

Typical building information								
Category	Construction	Use	Occ.	Day				
	7 BRICK	BN HQ BLDG	0600-1700	SUN-SAT				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.2602
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
НОАОНС	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	4.84E+03	4.84E+03
NSC		6.25E+04
FV	0	0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

04-Apr-95

DATE:

PAGE 1 OF 2

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

10130

System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	5,041.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,328.6	0.0	
Economizer	0.0	0.0	0.0	-
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	1.9	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	5,328.6	1.9	

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10130

04-Apr-95 PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

13,305

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE2

Typical Building Information

		Typical Balleting Internation						
ĺ	Category	Construction	Use	Occ.	Day			
	17	BRICK	BN HQ BLDG	0600-1700	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	0.75
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	75.00%
TON CAPC.	0
MBTU CAPC.	0.1117
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	257.00	257.00
HOAOHC	158.00	158.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC	4.84E+03	4.84E+03
NSC	6.25E+04	6.25E+04
FV	0	0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

10130

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	2,268.5	0.0	
Optimum ST/SP	0.0	129.4	0.0	
Duty Cycle	0.0	0.0	0.0	· · · · · · · · · · · · · · · · · · ·
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	623.3	
Sub Total	0.0	2,397.8	623.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	48.3	
HW OA Reset	0.0	0.0	0.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	1
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	2,397.8	672.5	3

ENERGY CALCULATIONS

BUILDING 10132

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10,132

01-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

50,156

9

System Type

CONVERTER AND PUMPS

System Name: System Number:

HE-1

Typical Building Information

Typica: Building the matter							
Category Construction		Use	Occ.	Day			
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI		

Enter Weeks of Summer:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.5123
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

10,132

System Type

..,...

System Name:

CONVERTER AND PUMPS

System Number:

HE-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr	
Schedule ST/SP	0.0	0.0	0.0		
Optimum ST/SP	0.0	287.5	0.0		•
Duty Cycle	0.0	0.0	0.0		
Demand Limit	0.0	0.0	0.0		
Night Setback	0.0	0.0	0.0		
Sub Total	0.0	287.5	0.0		
Economizer	0.0	0.0	0.0		
Ventilation/Recirculation	0.0	0.0	0.0		
DDC Control	0.0	0.0	0.0		
HW OA Reset	0.0	0.0	3.8		
Chilled Water Reset	0.0	0.0	0.0		
Condenser Water Reset	0.0	0.0	0.0		
Chiller Demand Limit	0.0	0.0	0.0		
Remote Monitoring, Maintenance,					
Run Time, and Safety Alarms					3
TOTAL	0.0	287.5	3.8		3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10,132

01-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

50,156

12

System Type System Name:

BASEBOARD RADIATION

System Number:

HE-2

Typical Building Information

Typical Building Milotination								
Category Constructi		Construction	Use	Occ.	Day			
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20	
32)

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.9801
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

10,132

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HE-2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	***
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	· · · · · · · · · · · · · · · · · · ·
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	7.3	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	7.3	3 1

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10132

EMC NO.: 1406-006 DATE: 12

DATE: 12-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

17,053

System Type

14

System Name:

VENTILATION

System Number:

AHU-1

Typical Building Information

	Typious Busing mornianes.							
Category Construction		Use	Occ.	Day				
	14	BRICK	ADM & SUPPLY,ENL BRK V	0600-1700	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	7	М	T	W	TH	F	S
Start Time	(כ	600	600	600	600	600	0
Stop Time		2	1700	1700	1700	1700	1700	0
Stop Tille								

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG	0	
CFM - CLG	4779	
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
. ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

12-Apr-95 PAGE 2 OF 2

Bldg Number:

10132

System Type System Name:

14 VENTILATION

System Number:

AHU-1

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,666.1	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,092.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				0
TOTAL	0.0	5,092.0	0.0	0

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

10132

12-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

17,053 14

System Type

VENTILATION

System Name: System Number:

AHU2

Typical Building Information

rypiour manang morning								
Category Construction		Use	Occ.	Day				
14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG		0
CFM - CLG		4566
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		. 1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC		0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

12-Apr-95 PAGE 2 OF 2

Bldg Number:

10132

System Type

14

System Name:

VENTILATION

System Number:

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,666.1	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,092.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				0
TOTAL	0.0	5,092.0	0.0	0

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10132

EMC NO.: 1406-006

DATE: 01-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

17,053

System Type

Stop Time

System Name:

VENTILATION

System Number:

AHU3

Typical Building Information

	Typious Danialing Information						
Category	Construction	Use	Occ.	Day			
14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	01	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	11. 1970	INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG		0
CFM - CLG		4779
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS	REQUIRED	PRESENT
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

10132

System Type System Name: 14 VENTILATION

System Number:

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,666.1	0.0	
Optimum ST/SP	0.0	425.8	0.0	*
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,092.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,092.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

10132

BLDG:

DATE: 12-Apr-95

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.: System Type

17,053

System Name:

14 **VENTILATION**

System Number:

AHU-4

Typical Building Information

Typical Dallating information.							
Category	Construction	Use	Occ.	Day			
14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20 32

Required Operation	S	М	Т	W	Ŧ	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor		0.8
CFM - HTG		4779
CFM - CLG		0
% OA		100.00%
% Area	-	0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

12-Apr-95 PAGE 2 OF 2

Bldg Number:

10132

System Type

14

System Name:

VENTILATION

System Number:

AHU-4

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,666.1	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,092.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				
TOTAL	0.0	5,092.0	0.0	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

•

10132

DATE: 01-Apr-95 PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

17,053

System Type

H&V UNIT WITHOUT RETURN FAN

System Name: System Number:

AHU6

Typical Building Information

1) piour = 1							
Category Construction		Use	Occ.	Day			
14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		750
CFM - CLG		0
% OA		100.00%
% Area		12.75%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
НОАОНС	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

10132

Bldg Number: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	75.9	
Sub Total	0.0	1,683.3	75.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	9.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	85.0	3

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10132

01-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

17,053

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU7

Typical Building Information

Typical Building information									
Category Construction		Use	Occ.	Day					
14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI	١				

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		750
CFM - CLG		0
% OA		100.00%
% Area		12.75%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10132

System Type
System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	75.9	
Sub Total	0.0	1,683.3	75.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	9.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	85.0	10 To 3 to 10 To 3 to 3 to 3 to 3 to 3 to 3 to 3 to 3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10132

DATE:

01-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

17,053

8UHA

Building Sq.Ft.: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

Typical Building Information

Typical Building Information								
Category Construction		Use	Occ.	Day				
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP	0.33	
Load Factor	0.8	
CFM - HTG		750
CFM - CLG		0
% OA		100.00%
% Area		12.75%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	28 Ozer O – An 1990 C
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	1

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10132

System Type
System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	75.9	
Sub Total	0.0	1,683.3	75.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	9.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	85.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10132

01-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

17,053

Building Sq.Ft.: System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU9

Typical Building Information

Typiour Dunaning information								
Category		Construction	Use	Occ.	Day			
	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	NACTOR S	S	М	T	W	TH	F	S
Start Time		0	0	0	0	0	0	0
Stop Time		2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT				
Motor HP	0.33					
Load Factor	0.8					
CFM - HTG	CFM - HTG					
CFM - CLG		0				
% OA		100.00%				
% Area		12.75%				
TON CAPC.		0				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		12				
EFF		1				
LOOK-UP VALUE						
EFFHP	65.00%	65.00%				

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

10132

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	75.9	
Sub Total	0.0	1,683.3	75.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	9.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				The state of the s
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	85.0	3.7

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10132

02-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

35,279

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU10

Typical Building Information

Typical Dantong microscope							
Category	Construction	Use	Occ.	Day			
15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.5
Load Factor		0.8
CFM - HTG		1860
CFM - CLG	0	
% OA		100.00%
% Area		19.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

 LOCATION: FT. DRUM
 Date:
 02-Apr-95

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 PAGE 2 OF 2

Bldg Number: 10132 System Type 1

System Name: H&V UNIT WITHOUT RETURN FAN

System Number: AHU10

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	77.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms	3			
TOTAL	0.0	0.0	77.5	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10132

Building Sq.Ft.:

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU11

Typical Building Information

	Typical Building information						
٢	Category	Construction	Use	Occ.	Day		
t	15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

BLDG:

Present Operations	S	М	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		1350
CFM - CLG		0
% OA		100.00%
% Area		19.30%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH		0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	0.00	0.00
НОАОНС	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC		1.40E+04
NSC		0.00E+00
FV	0	0
CHWR		9.57
OAR		7.40
OPT	0.00	0.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

DATE:

PAGE 1 OF 2

02-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10132

System Type

.

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	92.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	92.5	3

ENERGY CALCULATIONS

BUILDING 10134

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

59,693

10,134

Building Sq.Ft.: System Type

System Name:

CONVERTER AND PUMPS

System Number:

HE-1

Typical Building Information

Typical Bulluling information							
Category	Construction	Use	Occ.	Day			
14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

Enter Weeks of Winter: 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400
L							

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	5,756 51285.	INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.5123
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

DATE:

PAGE 1 OF 2

01-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

10,134

System Type

ç

System Name:

CONVERTER AND PUMPS

System Number:

HE-1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	287.5	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	3.8	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	9. Trong (20. Trong (2	287.5	3.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10,134

P

DATE: 01-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

System Type

59,693 12

System Name:

BASEBOARD RADIATION

System Number:

HE-2

Typical Building Information

	., р						
	Category Construction		Use	Occ.	Day		
Ì	14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.75
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0.9801
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
НОАОНС	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	0.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number: System Type

10,134 12

System Name:

BASEBOARD RADIATION

System Number:

HE-2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	7.3	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	7.3	de 70 lety 4 3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10134

EMC NO.: 1406-006

DATE: 01-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

Building Sq.Ft.:

20,296

System Type

VENTILATION

System Name: System Number:

AHU1

Typical Building Information

Typical Danting Internation						
Category Construction		Use	Occ.	Day		
<u> </u>	14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI	

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		3
Load Factor	0.8	
CFM - HTG	0	
CFM - CLG		4566
% OA		100.00%
% Area		0.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		5
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS	REQUIRED	PRESENT
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	i 2,060	
Heating HRSAV	3,296]
C/H HRSAV	5,371	

CONSTANT LOOK-UP INPUT HOAUH 0.00 0.00 HOAUHC 0.00 0.00 COAUC 0.00E+00 0.00E+00 COAUHC 0.00E+00 0.00E+00 HOAOH 220.75 220.75 HOAOHC 110.07 110.07 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 5.84E+03 5.84E+03 NSC 4.86E+04 4.86E+04			
HOAUHC 0.00 0.00 COAUC 0.00E+00 0.00E+00 COAUHC 0.00E+00 0.00E+00 HOAOH 220.75 220.75 HOAOHC 110.07 110.07 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00	CONSTANT	LOOK-UP	INPUT
COAUC 0.00E+00 0.00E+00 COAUHC 0.00E+00 0.00E+00 HOAOH 220.75 220.75 HOAOHC 110.07 110.07 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 DC DC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DCCHC 0.00E+00 0.00E+00 DCCHC 0.00E+00 0.00E+00 DCCHC 0.00E+00 0.00E+00 DCCC 0.00E+00 0.00E+00 DCCC 0.00E+00 0.00E+00	HOAUH	0.00	0.00
COAUHC 0.00E+00 0.00E+00 HOAOH 220.75 220.75 HOAOHC 110.07 110.07 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 DECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00	HOAUHC	0.00	0.00
HOAOH 220.75 220.75 HOAOHC 110.07 110.07 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00	COAUC	0.00E+00	0.00E+00
HOAOHC 110.07 110.07 COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00	COAUHC	0.00E+00	0.00E+00
COAOC 0.00E+00 0.00E+00 COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00	НОАОН	220.75	220.75
COAOHC 0.00E+00 0.00E+00 DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DDCCC 5.84E+03 5.84E+03	HOAOHC	110.07	110.07
DC DUTY 0.00 0.00 DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 5.84E+03 5.84E+03	COAOC	0.00E+00	0.00E+00
DC DEMAN 0.17 0.17 ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 5.84E+03 5.84E+03	COAOHC	0.00E+00	0.00E+00
ECC 0.00E+00 0.00E+00 ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 5.84E+03 5.84E+03	DC DUTY	0.00	0.00
ECHC 0.00E+00 0.00E+00 NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 5.84E+03 5.84E+03	DC DEMAN	0.17	
NSUCC 0.00E+00 0.00E+00 NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 5.84E+03 5.84E+03	ECC	0.00E+00	
NSUCHC 0.00E+00 0.00E+00 DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 5.84E+03 5.84E+03			0.00E+00
DDCCHC 0.00E+00 0.00E+00 DDCCC 0.00E+00 0.00E+00 DSC 5.84E+03 5.84E+03	NSUCC	0.00E+00	0.00E+00
DDCCC 0.00E+00 0.00E+00 DSC 5.84E+03 5.84E+03	NSUCHC	0.00E+00	0.00E+00
DSC 5.84E+03 5.84E+03	DDCCHC	0.00E+00	
500 0:0:12 00	DDCCC	0.00E+00	0.00E+00
NSC 4.86E+04 4.86E+04	DSC	5.84E+03	
	NSC	4.86E+04	4.86E+04
FV 0 0	FV	0	
CHWR 9.57 9.57	CHWR	9.57	
OAR 7.40 7.40	OAR	7.40	
OPT 188.00 188.00	OPT	188.00	188.60

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

12-Apr-95 PAGE 2 OF 2

Bldg Number:

10134

System Type

14

System Name:

VENTILATION

System Number:

AHU-1

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,666.1	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,092.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				0
TOTAL	0.0	5,092.0	0.0	0

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10134

EMC NO.: 1406-006

DATE: 12-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

17,053

System Type

14

System Name:

VENTILATION

System Number:

AHU-2

Typical Building Information

Typrout Dunting intermediate							
Category	Construction	Use	Occ.	Day			
14	BRICK	ADM & SUPPLY,ENL BRK V	0600-1700	MON-FRI			

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	.0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	3
Load Factor	0.8
CFM - HTG	0
CFM - CLG	4779
% OA	100.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	5
EFF	1
LOOK-UP VALUE	
EFFHP 79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAND	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

10134

System Type

14

System Name:

Bldg Number:

VENTILATION

System Number:

AHU-2

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,666.1	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,092.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				0
TOTAL	0.0	5,092.0	0.0	0

Date:

12-Apr-95 PAGE 2 OF 2

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

20,296

10134

EMC NO.: 1406-006

DATE: 01-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

System Type

14 **VENTILATION**

System Name: System Number:

AHU3

Typical Building Information

	. , p			
Category	Construction	Use	Occ.	Day
1	4 BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI

Enter Weeks of Summer:

20

32 **Enter Weeks of Winter:**

Required Operation	S	М	T	W	Ŧ	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	3
Load Factor	0.8
CFM - HTG	0
CFM - CLG	4566
% OA	100.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	5
EFF	1
LOOK-UP VALUE	
EFFHP 79.00%	79.00%

HOURS		2 P 10 P 10 P 10 P 10 P 10 P 10 P 10 P 1
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
НОАОНС	110.07	110.07
COAOC		0.00E+00
COAOHC		0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC		5.84E+03
ŅSC	4.86E+04	4.86E+04
FV		0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

10134

System Type

14 VENTILATION

System Name: System Number:

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,666.1	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,092.0	0.0	
Economizer	0.0	0.0	0.0	*
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,092.0	0.0	3 1

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10134

EMC NO.: 1406-006

01-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

20,296

System Type

14

System Name:

VENTILATION

System Number:

AHU4

Typical Building Information

Typical Dallating Information							
Category	Construction	Use	Occ.	Day			
1	4 BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI			

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	3
Load Factor	0.8
CFM - HTG	0
CFM - CLG	4566
% OA	100.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	5
EFF	1
LOOK-UP VALUE	
EFFHP 7	9.00% 79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
		3,360
Cooling HRSON	1,300	<u>.</u>
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
НОАОНС	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR		9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

01-Apr-95 PAGE 2 OF 2

Bldg Number:

10134

System Type

14

System Name:

VENTILATION

System Number:

COOLING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	4,666.1	0.0	
Optimum ST/SP	0.0	425.8	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	7777 100 100 100 100
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	5,092.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	0.0	***************************************
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	5,092.0	0.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

20,296

10134

02-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

Typical Building Information

Typical Dallaing illicities							
Category		Construction	Use	Occ.	Day		
	14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI		

Enter Weeks of Summer:

Enter Weeks of Winter:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		0.33
Load Factor		0.8
CFM - HTG		750
CFM - CLG		0
% OA		100.00%
% Area		12.75%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
		0.00E+00
COAUHC	0.00E+00	220.75
НОАОН	220.75	
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR		7.40
OPT	188.00	188.00
Ort	100.00	100.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10134

System Type

10104

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	125.9	
Sub Total	0.0	1,683.3	125.9	
Economizer	0.0	0.0	0.0	- 01010
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	15.1	
HW OA Reset	0.0	0.0	0.0	- 170 00000-1-1-1
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		700		
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	141.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

10134

1700

1700

1700

BLDG:

EMC NO.: 1406-006

02-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

0

0

PAGE 1 OF 2

Building Sq.Ft.:

20,296

System Type

Stop Time

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU7

Typical Building Information

. , , , , , , , , , , , , , , , , , , ,								
Category Construction		Use	Occ.	Day				
14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI				

0

Enter Weeks of Summer:

20 32

1700

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	
Start Time	0	600	600	600	600	600	
Otal Cilina					4=00	4700	

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

1700

INPUTS		INPUT				
Motor HP		0.33				
Load Factor	Load Factor					
CFM - HTG		750				
CFM - CLG		0				
% OA		100.00%				
% Area		12.75%				
TON CAPC.		0				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		12				
EFF		1				
LOOK-UP VALUE						
EFFHP	65.00%	65.00%				

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	220.75	220.75
НОАОНС	110.07	110.07
COAOC	0.00E+00	0.00E+00
СОАОНС	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC		0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
· NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10134

System Type

10104

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	125.9	
Sub Total	0.0	1,683.3	125.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	15.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	141.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

10134

PREPARED BY: CSW/BMG

EMC NO.: 1406-006

CHECKED BY: KC/WLC

02-Apr-95

PAGE 1 OF 2

DATE:

Building Sq.Ft.:

20,296

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

8UHA

Typical Building Information

	Typical Zallang Internation									
Category Construction		Use	Occ.	Day						
r	14	BRICK	ADM & SUPPLY,ENL BRK	0600-1700	MON-FRI					

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

BLDG:

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	TO STATE		INPUT	
Mot	0.33			
Load	0.8			
CFM	CFM - HTG			
CFM	- CLG		0	
	% OA		100.00%	
9/	6 Area		12.75%	
TON	CAPC.		0	
MBTU	CAPC.		0	
k	:W/Ton		0	
M	OSON		12	
	EFF		1	
LOOK-UP VALU	JE			
E	FFHP	65.00%	65.00%	

HOURS CALCULATIONS		PRESENT HR/YR
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC		0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10134

System Type
System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	125.9	
Sub Total	0.0	1,683.3	125.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	15.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	141.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM **Building Sq.Ft.:**

BLDG:

10134

System Type

20,296

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU9

Typical Building Information

	Typical Building Information							
	Category		Construction	Use	Occ.	Day		
-		14	BRICK	ADM & SUPPLY, ENL BRK	0600-1700	MON-FRI	l	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	600	600	600	600	600	0
Stop Time	0	1700	1700	1700	1700	1700	0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS			INPUT	
Moto	0.33			
Load F	0.8			
CFM -	750			
CFM -	0			
9	100.00%			
%	Area		12.75%	
TON C	APC.		0	
MBTU C	APC.		0	
kV	V/Ton		0	
MC	SON		12	
	EFF			
LOOK-UP VALUE				
EF	FHP	65.00%	65.00%	

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,300	3,360
Heating HRSON	2,080	5,376
C/H HRSON	3,389	8,760
Cooling HRSAV	2,060	
Heating HRSAV	3,296	
C/H HRSAV	5,371	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC		0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	220.75	220.75
HOAOHC	110.07	110.07
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	5.84E+03	5.84E+03
NSC	4.86E+04	4.86E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

02-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10134

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	1,626.4	0.0	
Optimum ST/SP	0.0	56.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	125.9	
Sub Total	0.0	1,683.3	125.9	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	15.1	-
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	1,683.3	141.0	. 17 July 1 1 1 1 1 1 1 1 1 3 1

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10134

DATE: 02-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

39,397

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

AHU10 System Number:

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
Category	Construction	Use	Occ.	Day		
 	5 BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0_
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	Jaka Y	1.43	INPUT
Moto		0.5	
Load F	actor		8.0
CFM - I	HTG		1860
CFM - (CLG		0
%	OA		100.00%
% /	Area		19.30%
TON CA	NPC.		0
MBTU C	APC.		0
kV	I/Ton		0
MO	SON		12
	EFF		1
LOOK-UP VALUE			
EF	FHP	65.00%	65.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	1.40E+04	1.40E+04
NSC	0.00E+00	0.00E+00
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	0.00	0.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

10134

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	<u> </u>
Optimum ST/SP	0.0	0.0	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	92.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms	3			
TOTAL	0.0	0.0	92.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10134

Building Sq.Ft.: System Type

39,397

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU11

Typical Building Information

Typical Building information							
Category		Construction	Use	Occ.	Day		
 	15	BRICK	ADM & SUPPLY, ENL BRK	0000-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT				
Motor HP	Motor HP					
Load Factor		0.8				
CFM - HTG		1350				
CFM - CLG		0				
% OA	100.00%					
% Area		19.30%				
TON CAPC.		0				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		12				
EFF		1				
LOOK-UP VALUE						
EFFHP	65.00%	65.00%				

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	3,360	3,360
Heating HRSON	5,376	5,376
C/H HRSON	8,760	8,760
Cooling HRSAV	0	
Heating HRSAV	0	
C/H HRSAV	0	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	0.00	0.00
HOAOHC	0.00	0.00
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC		1.40E+04
NSC		0.00E+00
FV	0	0
CHWR		9.57
OAR		7.40
OPT	0.00	0.00

EMC NO.: 1406-006

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

02-Apr-95

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

02-Apr-95 PAGE 2 OF 2

Bldg Number:

10134

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEM	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	0.0	0.0	
Optimum ST/SP	0.0	0.0	0.0	•
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	0.0	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	92.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	0.0	92.2	

ENERGY CALCULATIONS

BUILDING 10150

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10150

EMC NO.: 1406-006

DATE: 06-Apr-95
PREPARED BY: CSW/BMG
CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

18,460

System Type

•

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU1

Typical Building Information

		. , p				
Category Co		Construction Use		Occ.	Day	
	1	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT	

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	7.5
Load Factor	0.8
CFM - HTG	8000
CFM - CLG	0
% OA	100.00%
% Area	17.60%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	39.67	39.67
НОАОНС	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	. 0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

10150

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,789.6	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	174.4	
Sub Total	0.0	12,801.7	174.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	63.0	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0,0	12,801.7	237.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10150

EMC NO.: 1406-006 06-Apr-95 DATE:

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

18,460

System Type

System Name:

H&V UNIT

System Number:

AHU2

Typical Building Information

	. , p	u		
Category	Construction	Use	Occ.	Day
16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	М	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		8
Load Factor		0.8
CFM - HTG		5265
CFM - CLG		0
% OA		25.00%
% Area		17.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HŘSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC		3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

10150

System Type

2

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	14,042.8	0.0	
Optimum ST/SP	0.0	1,079.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	294.7	
Sub Total	0.0	15,122.3	294.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	106.5	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	15,122.3	401.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10150

DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

06-Apr-95

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

18,460

System Type System Name:

H&V UNIT

System Number:

AHU3

Typical Building Information

Typical Ballating Information							
Category		Construction	Use	Occ.	Day		
- Calegory	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		10
Load Factor		0.8
CFM - HTG		4670
CFM - CLG		0
% OA		100.00%
% Area		15.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	85.80%	85.80%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

LOOK-UP	INPUT
0.00	0.00
0.00	0.00
0.00E+00	0.00E+00
0.00E+00	0.00E+00
39.67	39.67
24.34	24.34
0.00E+00	0.00E+00
0.00E+00	0.00E+00
0.00	0.00
0.17	0.17
0.00E+00	0.00E+00
3.39E+04	3.39E+04
9.39E+04	9.39E+04
0	0
9.57	9.57
7.40	. 7.40
188.00	188.00
	0.00 0.00E+00 0.00E+00 39.67 24.34 0.00E+00 0.00E+00 0.017 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.57 9.57 7.40

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

10150

System Type

2

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr	
Schedule ST/SP	0.0	17,001.1	0.0		
Optimum ST/SP	0.0	1,307.0	0.0		
Duty Cycle	0.0	0.0	0.0		
Demand Limit	0.0	0.0	0.0	1.11	
Night Setback	0.0	0.0	260.0		
Sub Total	0.0	18,308.0	260.0		
Economizer	0.0	0.0	0.0		
Ventilation/Recirculation	0.0	0.0	0.0		
DDC Control	0.0	0.0	93.9		
HW OA Reset	0.0	0.0	0.0		
Chilled Water Reset	0.0	0.0	0.0		
Condenser Water Reset	0.0	0.0	0.0		
Chiller Demand Limit	0.0	0.0	0.0		
Remote Monitoring, Maintenance,					
Run Time, and Safety Alarms				3	
TOTAL	0.0	18,308.0	354.0	3	

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10150

06-Apr-95

EMC NO.: 1406-006

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

18,460

System Type

System Name:

H&V UNIT

System Number:

AHU4

Typical Building Information

.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								
Category	Construction	onstruction Use		Day				
16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT				

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	M	Т	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	7430
CFM - CLG	0
% OA	5.00%
% Area	24.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.70°	% 86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	ROUGH ON ONE TO A PROPERTY OF
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

10150

System Type

2

System Name:

H&V UNIT

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	25,236.9	0.0	• • • • • • • • • • • • • • • • • • • •
Optimum ST/SP	0.0	1,940.1	0.0	A-10
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	416.1	
Sub Total	0.0	27,177.0	416.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	150.3	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	27,177.0	566.4	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10150

DATE:

EMC NO.: 1406-006

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

18,460

System Type

System Name: System Number: **H&V UNIT**

AHU5

Typical Building Information

Category	Construction	Use	Occ.	Day
16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT

Enter Weeks of Summer:

20

Enter Weeks of Winter:

32

Required Operation	S	М	Т	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	1930	1930	1930	1930	1930	1930	1930

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	6
Load Factor	0.8
CFM - HTG	3145
CFM - CLG	0
% OA	5.00%
% Area	10.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,422	3,360
Heating HRSON	3,875	5,376
C/H HRSON	6,314	8,760
Cooling HRSAV	938	
Heating HRSAV	1,501	
C/H HRSAV	2,445	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

10150

System Type

2

System Name:

H&V UNIT

System Number:

AHU5

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	10,725.7	0.0	
Optimum ST/SP	0.0	824.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	173.4	
Sub Total	0.0	11,550.2	173.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	62.6	
HW OA Reset	0.0	0.0	0.0	·
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	11,550.2	236.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

175

Building Sq.Ft.: System Type

19,439

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

Typical Building Information

	Typical Building information								
Γ	Category		Construction	Use	Occ.	Day			
T		16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT			

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		4
Load Factor		0.8
CFM - HTG		600
CFM - CLG		0
% OA		0.00%
% Area		1.60%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	79.00%	79.00%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	. 7.40
OPT	188.00	188.00

EMC NO.: 1406-006

PAGE 1 OF 2

PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

06-Apr-95

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number:

175

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

AHU6

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	6,614.1	0.0	
Optimum ST/SP	0.0	567.8	0.0	
Duty Cycle	0.0	0.0	0.0	1 11 12 12 12 12 12 12 12 12 12 12 12 12
Demand Limit	0.0	0.0	0.0	100000000000000000000000000000000000000
Night Setback	0.0	0.0	29.2	
Sub Total	0.0	7,181.9	29.2	
Economizer	0.0	0.0	0.0	The second secon
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	10.6	
HW OA Reset	0.0	0.0	0.0	·
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	7,181.9	39.8	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY** BLDG:

LOCATION: FT. DRUM

10150

EMC NO.: 1406-006 DATE:

06-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

18,460

System Type

HE1

System Name:

CONVERTER AND PUMPS

System Number:

Typical Building Information

Typical Building information							
Category		Construction	Use	Occ.	Day		
<u> </u>	16	BRICK	ENK PERS DINNING	0400-2400	SUN-SAT		

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	400	400	400	400	400	400	400
Stop Time	2000	2000	2000	2000	2000	2000	2000

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		2
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		7.40%
TON CAPC.		0
MBTU CAPC.		1.5064
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	78.00%	78.00%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	2,520	3,360
Heating HRSON	4,032	5,376
C/H HRSON	6,570	8,760
Cooling HRSAV	840	
Heating HRSAV	1,344	
C/H HRSAV	2,190	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	39.67	39.67
HOAOHC	24.34	24.34
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	3.39E+04	3.39E+04
NSC	9.39E+04	9.39E+04
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

06-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10150

System Name:

9 CONVERTER AND PUMPS

System Number:

HE1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	3,349.5	0.0	
Optimum ST/SP	0.0	287.5	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	128.3	
Sub Total	0.0	3,637.0	128.3	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	Au-
DDC Control	0.0	0.0	46.3	
HW OA Reset	0.0	0.0	11.1	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	3,637.0	185.8	3

ENERGY CALCULATIONS

BUILDING 10170

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10170

TH

700

1600

700

1600

EMC NO.: 1406-006

DATE: 05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

PAGE 1 OF 2

S

700

1600

700

1600

Building Sq.Ft.:

25,984

System Type

2

System Name:

H&V UNIT

System Number:

HV1

Typical Building Information

Typical Building Information							
Category	Construction	Use	Occ.	Day			
1	8 BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

20 32

700

1600

Enter Weeks of Winter:

Start Time

Stop Time

Required Operation	S	M	T	W

0

0

,			

700

1600

Present Operations	S	M	Ŧ	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	22.5
Load Factor	0.8
CFM - HTG	11135
CFM - CLG	0
% OA	100.00%
% Area	10.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HUAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number: System Type 10170 2

System Type
System Name:

H&V UNIT

System Number:

HV1

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	81,021.0	0.0	
Optimum ST/SP	0.0	2,863.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	24.1	
Sub Total	0.0	83,884.9	24.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	6.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	83,884.9	30.2	3.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10170

1600

1600

1600

04-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

1600

Building Sq.Ft.:

25,984

System Type

2

System Name:

H&V UNIT

System Number:

HV2

Typical Building Information

Typious Dustaining time time to							
Category	Construction	Use	Occ.	Day			
	18 BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

0

Enter Weeks of Summer:

20 32

1600

Enter Weeks of Winter:

Stop Time

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700

1600

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT				
Motor HP	27.5				
Load Factor	0.8				
CFM - HTG	11410				
CFM - CLG	0				
% OA	33.00%				
% Area	10.00%				
TON CAPC.	0				
MBTU CAPC.	0				
kW/Ton	0				
MOSON	12				
EFF	1				
LOOK-UP VALUE					
EFFHP 89.40%	89.40%				

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC		0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC		0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC		0.00E+00
ECHC		0.00E+00
NSUCC		
NSUCHC		0.00E+00
DDCCHC		0.00E+00
DDCCC		0.00E+00
DSC		2.36E+03
NSC		9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR		7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

10170

System Type

System Name:

H&V UNIT

System Number:

HV2

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	97,585.7	0.0	
Optimum ST/SP	0.0	3,449.4	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	24.1	
Sub Total	0.0	101,035.1	24.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	6.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	101,035.1	30.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10170

04-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.: System Type

25,984

System Name: System Number: **H&V UNIT** HV3

Typical Building Information						
Category		Construction	Use	Occ.	Day	
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT	

Enter Weeks of Summer:

20

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS			INPUT
Mote	22.5		
Load	Factor		0.8
CFM -	HTG		6020
CFM -	CLG		0
(% OA		33.00%
%	10.00%		
TON C	0		
MBTU (CAPC.		0
k\	N/Ton		0
Mo	OSON		12
	1		
LOOK-UP VALU	E		
El	FFHP	88.10%	88.10%

HOURS CALCULATIONS	REQUIRED HR/YR	Arthur San Title or Great Mill 1909
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0_
CHWR	9.57	
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

04-Apr-95 PAGE 2 OF 2

Bldg Number:

10170

System Type

2

System Name:

H&V UNIT

System Number:

HV3

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	81,021.0	0.0	
Optimum ST/SP	0.0	2,863.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	24.1	
Sub Total	0.0	83,884.9	24.1	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	6.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	83,884.9	30.2	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10170

700

1600

700

1600

700

1600

700

1600

EMC NO.: 1406-006 DATE: 05-Apr-95

PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

Building Sq.Ft.:

25,984

System Type

Start Time

Stop Time

2

System Name:

H&V UNIT

System Number:

HV4

Typical Building Information

	Typical Bullating Information						
ſ	Category	Construction	Use	Occ.	Day		
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT		

Enter Weeks of Summer:

20 32

700

1600

Enter Weeks of Winter:

Required Operation	S	М	Т	W	TH
		700	700	700	7/

0

0

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

700

1600

INPUTS			INPUT			
	Motor HP					
Load	Factor		0.8			
CFM	- HTG		4090			
CFM	CFM - CLG					
	% OA		100.00%			
9,	6 Area		5.00%			
TON	CAPC.		0			
MBTU	CAPC.		0			
k	:W/Ton		0			
N	IOSON		12			
	1					
LOOK-UP VALU	JE					
E	FFHP	88.10%	88.10%			

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10170

System Type

.

System Name:

H&V UNIT

System Number:

HV4

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	81,021.0	0.0	
Optimum ST/SP	0.0	2,863.9	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	12.0	A
Sub Total	0.0	83,884.9	12.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.1	P-5
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	83,884.9	15.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10170

EMC NO.: 1406-006

DATE: 05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

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Building Sq.Ft.:

25,984

System Type

1

MAU-1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

Typical Building Information

	. , p	dinaing invertible		
Category	Construction	Use	Occ.	Day
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

20

Enter Weeks of Summer: 32 **Enter Weeks of Winter:**

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	18150
CFM - CLG	0
% OA	100.00%
% Area	6.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86.70%	86.70%

HOURS	REQUIRED	PRESENT
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HŘSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10170

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	14.4	
Sub Total	0.0	56,826.3	14.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	18.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10170

05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

25,984

System Type

System Name: System Number: **H&V UNIT WITHOUT RETURN FAN**

MAU-2

Typical Building Information

Typical building information								
Category	Construction Use		Occ.	Day				
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT				

Enter Weeks of Summer:

32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor	0.8	
CFM - HTG	9200	
CFM - CLG	0	
% OA		100.00%
% Area		3.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number: System Type

10170

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	7.2	
Sub Total	0.0	56,826.3	7.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	1.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	9.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10170

DATE: 05-Apr-95 PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

25,984

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-3

Typical Building Information

Typical ballating information								
Category		Construction Use		Occ.	Day			
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT			

Enter Weeks of Summer:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	15
Load Factor	0.8
CFM - HTG	16920
CFM - CLG	0
% OA	100.00%
% Area	6.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 86	6.70% 86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	· 15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10170

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	14.4	
Sub Total	0.0	56,826.3	14.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	18.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10170

05-Apr-95 DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

25,984

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: MAU-4

Typical Building Information

	typiou. Denting internation						
Category Construction		Use	Occ.	Day	1		
	1	8 BRICK	VEH MNT SHOP	0700-1900	SUN-SAT		

Enter Weeks of Summer:

20 32

Required Operation	S	М	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		20000
CFM - CLG		0
% OA		100.00%
% Area		6.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10170

System Type System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	,
Night Setback	0.0	0.0	14.4	
Sub Total	0.0	56,826.3	14.4	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.7	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	18.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10170

DATE:

05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

25,984

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-5

Typical Building Information

	Typical Ballating Information									
ſ	Category	Construction	Use	Occ.	Day					
Ī	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT					

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		15
Load Factor		0.8
CFM - HTG		10000
CFM - CLG		0
% OA	100.00%	
% Area		3.00%
TON CAPC.		0
MBTU CAPC.		0
kW/Ton		0
MOSON		12
EFF		1
LOOK-UP VALUE		
EFFHP	86.70%	86.70%

HOURS CALCULATIONS	REQUIRED HR/YR	
		3,360
Cooling HRSON	1,320	
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10170

System Type

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System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	·····
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	7.2	
Sub Total	0.0	56,826.3	7.2	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	1.8	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,		,		
Run Time, and Safety Alarms				3
TOTAL LANGE CONTRACTOR OF THE	0.0	56,826.3	9.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10170

DATE:

05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

25,984

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

MAU-6

Typical Building Information

	Construction	Use	Occ.	Day					
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT					

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Ston Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	Т	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT				
Motor HP		15				
Load Factor	Load Factor					
CFM - HTG		16100				
CFM - CLG		0				
% OA		100.00%				
% Area		5.00%				
TON CAPC.		0				
MBTU CAPC.		0				
kW/Ton		0				
MOSON		12				
EFF		1				
LOOK-UP VALUE						
EFFHP	86.70%	86.70%				

Maria Maria and a surface of the control of the con	REQUIRED	Contract of the states
CALCULATIONS	HR/YR	HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

E M C ENGINEERS, INC. PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10170

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	54,886.2	0.0	
Optimum ST/SP	0.0	1,940.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	12.0	
Sub Total	0.0	56,826.3	12.0	-
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	3.1	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	56,826.3	15.1	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10170

PAGE 1 OF 2

DATE: PREPARED BY: CSW/BMG CHECKED BY: KC/WLC

05-Apr-95

EMC NO.: 1406-006

Building Sq.Ft.:

25,984

System Type

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number: MAU-7

Typical Building Information

	. y ploat warrang meeting									
Category Construction		Construction	Use	Occ.	Day					
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT					

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	7.5
Load Factor	0.8
CFM - HTG	16100
CFM - CLG	0
% OA	100.00%
% Area	2.00%
TON CAPC.	0
MBTU CAPC.	0
kW/Ton	0
MOSON	12
EFF	1
LOOK-UP VALUE	
EFFHP 83.10%	83.10%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
НОАОН	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10170

System Type

1

System Name:

H&V UNIT WITHOUT RETURN FAN

System Number:

HEATING AND VENTILATING SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	28,632.0	0.0	
Optimum ST/SP	0.0	1,012.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	4.8	
Sub Total	0.0	29,644.0	4.8	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	1.2	
HW OA Reset	0.0	0.0	0.0	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	29,644.0	6.0	

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

BLDG:

10170

EMC NO.: 1406-006

DATE: 05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

Building Sq.Ft.:

25,984

12

System Type
System Name:

BASEBOARD RADIATION

System Number:

HTP1

Typical Building Information

Typical Ballang Internation									
Category Construction		Use	Occ.	Day					
18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT					

Enter Weeks of Summer:

20 32

Required Operation	S	M	Т	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	М	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS		INPUT
Motor HP		5
Load Factor		0.8
CFM - HTG		0
CFM - CLG		0
% OA		0.00%
% Area		24.00%
TON CAPC.		0
MBTU CAPC.		3.587
kW/Ton		0
MOSON		7
EFF		1
LOOK-UP VALUE		
EFFHP	81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHO	0.00E+00	0.00E+00
DDCCHC		0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10170

System Type

12

System Name:

BASEBOARD RADIATION

System Number:

HTP1

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	57.7	
Sub Total	0.0	12,616.7	57.7	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	14.7	
HW OA Reset	0.0	0.0	26.5	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,616.7	99.0	3

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 **CLIENT PROJECT ENGINEER: STEVE ROWLEY**

LOCATION: FT. DRUM

BLDG:

10170

05-Apr-95 DATE: PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC PAGE 1 OF 2

EMC NO.: 1406-006

Building Sq.Ft.:

25,984

System Type System Name:

CONVERTER AND PUMPS

System Number:

HTP2

Typical Building Information

Category		Construction	Use	Occ.	Day
	18	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT

Enter Weeks of Summer:

20 32

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	5
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	4.62
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	Market and Control Control and Studential
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC		0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC	0.00E+00	0.00E+00
DSC	2.36E+03	2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR	9.57	9.57
OAR	7.40	7.40
OPT	188.00	188.00

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

05-Apr-95 PAGE 2 OF 2

Bldg Number:

10170

System Type

.

System Name:

CONVERTER AND PUMPS

System Number:

HTP2

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	12,616.7	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	34.2	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,616.7	34.2	3.1

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6
CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

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10170

DATE: 05-Apr-95 PREPARED BY: CSW/BMG

CHECKED BY: KC/WLC

EMC NO.: 1406-006

PAGE 1 OF 2

Building Sq.Ft.:

25,984

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HTP3

Typical Building Information

	Typical Zunanig morniation						
Category Constr		Construction	Use	Occ.	Day		
	1	BRICK	VEH MNT SHOP	0700-1900	SUN-SAT		

Enter Weeks of Summer:

20 32

Enter Weeks of Winter:

Required Operation	S	М	T	W	TH	F	S
Start Time	0	700	700	700	700	700	700
Stop Time	0	1600	1600	1600	1600	1600	1600

BLDG:

Present Operations	S	M	T	W	TH	F	S
Start Time	0	0	0	0	0	0	0
Stop Time	2400	2400	2400	2400	2400	2400	2400

INPUTS	INPUT
Motor HP	5
Load Factor	0.8
CFM - HTG	0
CFM - CLG	0
% OA	0.00%
% Area	0.00%
TON CAPC.	0
MBTU CAPC.	4.258
kW/Ton	0
MOSON	7
EFF	1
LOOK-UP VALUE	
EFFHP 81.60%	81.60%

HOURS CALCULATIONS	REQUIRED HR/YR	PRESENT HR/YR
Cooling HRSON	1,320	3,360
Heating HRSON	2,112	5,376
C/H HRSON	3,441	8,760
Cooling HRSAV	2,040	
Heating HRSAV	3,264	
C/H HRSAV	5,319	

CONSTANT	LOOK-UP	INPUT
HOAUH	0.00	0.00
HOAUHC	0.00	0.00
COAUC	0.00E+00	0.00E+00
COAUHC	0.00E+00	0.00E+00
HOAOH	15.77	15.77
HOAOHC	9.68	9.68
COAOC	0.00E+00	0.00E+00
COAOHC	0.00E+00	0.00E+00
DC DUTY	0.00	0.00
DC DEMAN	0.17	0.17
ECC	0.00E+00	0.00E+00
ECHC	0.00E+00	0.00E+00
NSUCC	0.00E+00	0.00E+00
NSUCHC	0.00E+00	0.00E+00
DDCCHC	0.00E+00	0.00E+00
DDCCC		0.00E+00
DSC		2.36E+03
NSC	9.26E+03	9.26E+03
FV	0	0
CHWR		9.57
OAR		7.40
OPT	188.00	188.00

e1

PROJECT: UMCS FEASIBILITY STUDY

CLIENT CONTRACT NO.: DACA01-94-D-0033 D.O. 6 CLIENT PROJECT ENGINEER: STEVE ROWLEY

LOCATION: FT. DRUM

Date:

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Bldg Number:

10170

System Type

9

System Name:

CONVERTER AND PUMPS

System Number:

HTP3

HEATING ONLY SYSTEMS	kW/yr	kWh/yr	MBtu/yr	MH/yr
Schedule ST/SP	0.0	11,929.6	0.0	
Optimum ST/SP	0.0	687.1	0.0	
Duty Cycle	0.0	0.0	0.0	
Demand Limit	0.0	0.0	0.0	·
Night Setback	0.0	0.0	0.0	
Sub Total	0.0	12,616.7	0.0	
Economizer	0.0	0.0	0.0	
Ventilation/Recirculation	0.0	0.0	0.0	
DDC Control	0.0	0.0	0.0	
HW OA Reset	0.0	0.0	31.5	
Chilled Water Reset	0.0	0.0	0.0	
Condenser Water Reset	0.0	0.0	0.0	
Chiller Demand Limit	0.0	0.0	0.0	
Remote Monitoring, Maintenance,				
Run Time, and Safety Alarms				3
TOTAL	0.0	12,616.7	31.5	3